SCORECARD APPROACH TO PERFORMANCE MANAGEMENT

IN A STATE-OWNED TOLL ROAD OPERATOR

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NATIONAL UNIVERSITY OF SINGAPORE

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SUMMARY

The Indonesia Highway Corporation [PT. Jasa Marga (Persero)] as a state-owned corporation was started in 1978 to manage expressway sections serving the capital city. However, in spite of its many years of toll road system operation since, Jasa Marga still lacks experience in collecting and monitoring information, forecasting future conditions, and prioritizing alternative maintenance strategies on current toll roads to accomplish a steady state of system preservation at a predetermined level of performance. In the past, the toll road management system in Indonesia was run on the subjective judgment of decision makers resulting inefficiency from the economic point of view. To improve the management system, Jasa Marga has proposed the development and implementation of a new Toll Road Maintenance Management System (TRMMS). The implementation of the TRMMS has resulted a comprehensive database of road system information, presenting the basis for cost effective preventive road maintenance to be carried out.

However, due to limitations in its financial and human resources, Jasa Marga has experienced problems in highway maintenance operations such as inefficiency, ineffectiveness of internal processes, and higher operational costs. Jasa Marga also has difficulty in measuring the human resource dimensions of its organization, such as employee satisfaction, employee capability, working relationship between employees, as well as employee empowerment and motivation. Furthermore, the business environment of toll roads in Indonesia has been evolving from 1978 to 2004 in line with globalization and Indonesia opening up its infrastructure sector to domestic and foreign participation. This has transformed the role of Indonesia's state-owned toll road operator, Jasa Marga which will now face increasing competition with the entry

of other investors. As such, Jasa Marga must work on implementing organizational change in order to adapt to its changing environment and meet the competition.

This study looks into the feasibility of using the Balanced Scorecard as the basis for a performance measurement and strategic management system in Jasa Marga. The Balanced Scorecard approach brings in additional perspectives for performance management relating to the financial and organizational development aspects, beyond the engineering aspects existing in a traditional Pavement Management System.

The objectives of this study are (1) to develop ideas for a strategic performance measurement framework in a semi-private highway organization based on the Balanced Scorecard approach; (2) to use the Balanced Scorecard process to identify relevant drivers and measures for a toll road company, and (3) to assess the viability of these ideas and proposals with the organization. The context of this study is provided by a semi autonomous government linked company involved in the operation of a toll road network, using data and information reported by Jasa Marga.

The study has developed several ideas with regard to how a Balanced Scorecard approach could be introduced into the technical/engineering process of a toll road operator. The author has translated the company's vision and mission statement into strategic objectives and potential measures for different perspectives and developed cause-and-effect relationships and linkages within and across all the four scorecard perspectives.

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CHAPTER I

INTRODUCTION

1.1 Background of the Study

Performance measurement has been recognized as a critical business success factor. Bassioni et al. (2004) reported that performance measurement has been the subject of a considerable amount of research and attention over the past 15 years. Knowledge and adoption of performance measurement has dramatically spread throughout the economy including the transportation sector. There has been considerable interest in the implementation of the performance measurement concept, as discussed by Chandler (1977), Kaplan (1984), and Bassioni et al. (2004) who reported the use of planning and control procedures by U.S. railroads as early as the 1860s and 1870s. Poister (1997) presented information on the degree to which state Departments of Transportation (DOTs) have developed and implemented performance measures. Closer to the subject of this thesis has been the implementation of performance measurement in highway maintenance discussed in Otto and Ariaratnam (1999). A performance measurement framework derived from an organization's vision, mission, and strategy is very important for an organization to survive and succeed in an era of increased information competition; moreover, performance measurement is central to the execution of business strategy.

Performance measurement provides feedback on the effectiveness of the organization's strategy and its realization (Chow et al., 1998). The organization is thus able to analyze

the gaps in performance and make adjustments if outcomes differ from objectives (McNair and Leibfried 1992). To achieve successful performance measurement, attention must be focused on the organization's objectives addressing issues relating to the use of time, energy and resources, within an overall performance measurement framework. One such framework is the Balanced Scorecard approach. The Balanced Scorecard translates an organization's vision and strategy into a comprehensive set of performance measures that provides a framework for strategic performance measurement. It provides a framework to translate vision and strategy into operational terms (Kaplan and Norton, 1996).

The Balanced Scorecard, as a concept in performance measurement frameworks, was first introduced by Kaplan of the Harvard Business School and Norton of Renaissance Solutions, Inc (Kaplan and Norton, 1992). It is an approach that integrates financial and non-financial strategic measures. The Balanced Scorecard translates an organization's vision and strategy into objectives and measures across a balanced set of perspectives, and emphasizes measures that must be part of the information system for employees at all levels of the organization (Kaplan and Norton, 1996).

The Balanced Scorecard was conceived to overcome some of the deficiencies perceived in traditional performance measurement systems. It is designed to complement traditional financial measurement and give a balanced presentation of both financial and operational measures by adding three non-financial perspectives, thereby allowing managers to know their business performance based on four key perspectives, namely, the financial, customer, internal business process, and learning and growth perspectives. Another key characteristic is the performance measures identified with these four key perspectives must be integrated in cause-and-

effect relationships. The Balanced Scorecard helps an organization manage performance and progress in a holistic manner across the organization. As a customer-based planning and process improvement system, the Balanced Scorecard focuses on driving a business unit's evolutionary process by identifying and evaluating significant performance measures (Chan, 2004). The Balanced Scorecard is most effective when it is deployed to drive organizational change. To communicate the need for change, key top members of an organization should establish performance targets for the measures, which if achieved, will change the organization. The performance targets should represent a discontinuity in business unit performance.

Performance measurement is one of the most powerful motivational tools available to an organization. However, the objective of a scorecard project should not be just to develop a new set of performance measures. Rather, by relating the different measures within a performance measurement framework, the Balanced Scorecard addresses the issue of developing a strategic management system. This difference between a performance measurement and a management system is subtle but important. The measurement system is only a way to achieve an important objective, while a strategic management system is able to help top and key members of an organization implement and gain feedback about their strategy. The performance measurement framework in the Balanced Scorecard has been proven in the area of creating long-term organizational change, thus making it more than an operational measurement system. Its proponents claim that it is a management system that can transform the energies, abilities, and specific knowledge owned by employees in the organization towards achieving long-term strategic goals (Kaplan and Norton, 1992; Hasan and Tibbits, 2000). Organizations employ the Balanced Scorecard to achieve their strategy over the long run since the approach aligns and supports critical management processes that (1)

clarify and translate vision and strategy into strategic objectives and measures, (2) link the strategic objectives and measures and communicate them throughout the organization, (3) plan, set targets, and align strategic initiatives, as well as (4) enhance strategic feedback and learning.

The Balanced Scorecard has been studied or applied by several state Departments of Transportation (DOTs) in the United States as part of their management renewal or quality improvement initiatives (Pagano et al., 2004; Doyle, 1998; Poister and Streib, 1999). Although the Balanced Scorecard has been adopted by state DOTs in the United States, it is still not widely known in the corresponding highway agencies in Indonesia, in particular Indonesia Highway Corporation [PT. Jasa Marga (Persero)]. Jasa Marga is a state-owned corporation that was started in 1978 to manage expressway sections serving the capital city. Currently, Jasa Marga operates and manages toll roads in Indonesia with a total length of 605 km, with 440 km (72.7 %) of which are managed exclusively by Jasa Marga; the remainder is operated jointly by Jasa Marga and other investors.

The business environment of toll roads in Indonesia has been evolving between 1978 and 2004 in line with globalization and Indonesia opening up its infrastructure sector to domestic and foreign participation (Levy, 1996; Kasudarman, 1998; Indonesia Infrastructure Summit and Exhibition, 2005). This has transformed the role of Indonesia's state-owned toll road operator, Jasa Marga which will face increasing competition with the entry of other investors. As such, Jasa Marga must work on implementing organizational change in order to adapt to its changing environment and meet the competition.

This study looks into the feasibility of introducing the Balanced Scorecard as a performance measurement and strategic management system in semi-autonomous government linked toll road operators like Jasa Marga. The Balanced Scorecard approach brings in additional perspectives for performance management relating to the financial and organizational development aspects, beyond the engineering aspects existing in traditional Pavement Management System.

1.2 Objectives of the Study

The objectives of this study are (1) to develop ideas for a strategic performance measurement framework in a semi-private highway organization based on the Balanced Scorecard approach; (2) use the Balanced Scorecard process to identify relevant drivers and measures for a toll road company, and (3) assess the viability of these ideas and proposals with the organization. The context of this study is provided by a semi autonomous government linked company involved in the operation of a toll road network, using data and information reported by the Indonesia Highway Corporation [PT. Jasa Marga (Persero)].

1.3 Research Methodology

A literature review is conducted to develop the theoretical basis and context for the study. The review examines the Balanced Scorecard concept and its application. This is followed by a review of general theories of performance measurement and their application, especially in the context of highway maintenance. The review concludes a brief description of how the development and management of road infrastructure in Indonesia is changing as a result of globalization. This latter development, the impending full privatization of toll road companies and the onset of competition are

the drivers for business restructuring and the adoption of best practices like BSC in strategic management.

1.4 Organization of the Thesis

This thesis is organized as five chapters. Chapter 1 presents the key concepts used in this study, as well as the motivation, objectives and methodology of the study. A literature review of the key concepts is provided in Chapter 2.

Chapter 3 describes in more detail an overview of Jasa Marga and the methodology adopted in this study, as well as the background behind the development of the questionnaires employed in the study.

Chapter 4 presents the results of the questionnaire survey, as well as a discussion of the feedback received from members of the two divisions of Jasa Marga involved in the study. The implications of the results of this study are also discussed. Finally, Chapter 5 concludes the thesis with a summary of the main conclusions and recommendations for further research.

CHAPTER II

LITERATURE REVIEW

2.1 Overview

A literature review of the key concepts is provided in this chapter. The chapter will provide an overview of toll roads, together with concepts and practices of performance measurement, Balanced Scorecard (BSC), and strategic management system.

2.2 An Overview of Toll Roads

A toll road is a road-user-charge system that can clearly discriminate between different types of vehicles, loads, distances and times. Tolls can be set depending on the characteristics of the form of road use. For example, heavy vehicles or vehicles on the road at peak hours can be charged higher tolls. In principle, tolling provides a much more accurate way of pricing than other systems of road user charges (Robinson et al., 1998). Tolls are also generally imposed for raising additional net revenues that may be re-invested in the road network (Johansen, 1989).

The various types of toll road companies can include public or private organizations, and public-private partnerships. The public organization is the basic type of toll road company. It is common in some countries. There are other variations of this type. In some cases, toll revenue is considered to cover the construction and maintenance cost during the entire period for which tolls are charged. In other cases, only parts of those costs are allocated to be met from toll revenue, with the public purse bearing the rest of the costs. A public organization is usually not expected to make a profit.

The private organization form involves a private sector entity being granted a concessionary license by the government to operate the toll road. There has been a surge of interest in private toll roads as an alternative to public un-tolled road infrastructure (Lindsey and De Palma, 1997). Private toll roads have an important role in alleviating traffic congestion, shrinking the use of public funds for road construction and maintenance, and growing acceptance of the 'user pays principle'.

Just as important as the difference between public and private organizations is the question of how the relationship between the two sectors is managed. Table 2-1 makes that comparison across several important issues (Mocj-Extec, 2000).

Table 2-1 Comparison between Public and Private Organizations in Toll Roads

Item	Public Organizations	Private Organizations
Number of organizations involved	The fewer organizations involved, the easier it will be to formulate toll tariff policy	Based on the principle of free competition that there should be as many as possible
Juridical characteristics	These organizations must be non-profit and established by legal statute	These organizations are regulated by company law
Contract with government	Legal statute renders contract unnecessary	Contract with acceptable content is essential
Right to expropriate land	Yes	Not granted expropriation rights to private companies for toll road construction
Risk prior to completion of road	Responsibility clearly rests with public organization	Necessary to clarify allocation of risk between contract-issuing organization and contractor/s
Government support and subsidies	Flexibility makes for ease of financial management	Necessary to strictly stipulate terms in contract
Political risk	Generally considered low; but should really be considered high, because of need to respond faithfully to changes in government policy.	Unavoidable unless there are strictly worded protective clauses in the contract.
Availability of financial credit	Government guarantees usually make all the difference	Very necessary
Guarantor	The government	A third party

Table 2-1 Comparison between Public and Private Organizations in Toll Roads (continuation)

Item	Public Organizations	Private Organizations
Availability of loans from international organizations	No problem	Loans must be done indirectly, via government
Organization's pace of progress	Generally slow but steady.	Rapid in early period when toll system is introduced. Risk of drastic slowdown later on, when less profitable aspects of project remain. Further risk that most profitable road segments will be cherry-picked by private sector.
Toll policy	Generally easy to reflect government policy.	Varies with composition of concessionaire (public/private vs. private only, etc). Difficult to establish unified toll policy where many private firms involved, hence necessary to clarify toll policy as far as possible in contract.
Appetite for involvement in related enterprises	Low. There may, however, be a willingness to invest in gasoline stations, restaurants and shops.	Generally high.

Source: *Mocj-Extec, World Bank retrieved from http://rru.worldbank.org/Documents/Toolkits, 2000*

Furthermore, public-private partnerships (PPPs) refer to contractual agreements formed between a public and private sector organizations that allow for greater private sector involvement in the delivery of toll road projects. In this scheme, a private sector takes more responsibility for designing, building, financing, operating, rehabilitating or maintaining a toll road. Traditionally, private sector participation has been limited to separate planning, designing or constructing contracts on a fee for service basis – based on the public organization's specifications. Financial benefits are among the main reasons for using toll road PPPs. More toll roads can be provided by cash-strapped governments through private sector participation. Equity investment in toll road PPPs can improve the long-term financial stability of the road compared to a government toll road which may rely solely on bond financing. Private sector involvement can also reduce political considerations that prevent the toll road from

operating at high efficiency. Indonesia Highway Corporation [PT. Jasa Marga (Persero)] as a state-owned enterprise co-operated with the private sector in toll road financing using the Build Operate Transfer (BOT) or Build, Transfer, Operate (BTO) project approach. In the BOT project, the private sector builds and operates the toll road; at the end of the concession period, the toll road is handed over to Jasa Marga. In the BTO project, the private sector builds the toll road, and then the toll road is handed over to Jasa Marga to operate during the concession period after construction has been completed. The private sector in that case usually receives a portion of the toll revenue.

2.3 Toll Roads in Indonesia

Toll roads form part of the road network system and represent as alternative to existing roads. The development of toll roads is thus part and parcel of existing road network. Toll roads have a higher specification and service compared to existing public roads. The determination of initial toll tariff and their subsequent adjustment is determined by the Minister of Public Works. The toll tariff is calculated based on the affordability to the road user, the extent of profit generated from the vehicle operational cost, and returns on investment. According to Law No. 38/2004 concerning roads, the Indonesia toll road is operated to: (1) speed up traffic flow in a developed area; (2) increase efficiency and effectiveness of goods and services distribution service in order to improve economic development; (3) alleviate the financial burden of the government by means of including the participation of the toll road user; and (4) enable equitable and just distribution of the results of development. The development of toll roads in Indonesia can be divided into three periods, i.e. the period of initiation, privatization, and liberalization.

2.3.1 The Initial Period

The history of toll roads in Indonesia started with the construction of Jagorawi, a 48 km. long toll road connecting Jakarta, Bogor, and Ciawi. Jagorawi was the first toll road built in Indonesia and started operation in parts in 1978. It was built by the Indonesian government. The government funded completely toll road projects, and then Jasa Marga's role was that of a toll road operator. Jagorawi was built by the government using a Government to Government loan (Indonesia Infrastructure Summit and Exhibition, 2005). According to Government Regulation (*Peraturan Pemerintah/PP*) No. 4/1978, Jasa Marga as a state-owned corporation was given the authority to manage toll roads in Indonesia.

Jasa Marga had responsibility for operating the toll road that was built by the Department of Public Works *(Departemen Pekerjaan Umum/DPU)*. This included the collection and maintenance of toll road. During this period, foreign loans funded approximately two-thirds of its investments. The Ministry of Finance made all interest and principal payments. The remaining-third of investments was funded principally through low-interest bonds sold to Indonesia Government employee pension funds.

2.3.2 Privatization of Toll Roads

During this period, the operation of toll roads referred to Law No. 13/1980 about Roads, and the construction of toll roads was to be conducted without placing a burden on the state budget. In 1986, the Indonesian government invited the private sector to participate with Jasa Marga in operating toll roads. As a state-owned corporation, Jasa Marga still had the sole one responsibility for toll roads, as well as the responsibility for toll road construction and financing. It was involved in all toll road projects, both

as regulator and operator. The company had direct negotiations with potential investors and become a partner in agreed joint-ventures that obtained concessions to finance, build, and operate toll road sections (Johansen, 1989). Jasa Marga co-operated with the private sector in toll road financing using the Build Operate Transfer (BOT) or Build, Transfer, Operate (BTO) project approach. In 1987 the Capital Investment Coordinating Board (BKPM) declared that capital investment in toll roads was open to both domestic and foreign participation. The Law and Government Regulation established the groundwork for toll road public private partnerships (PPPs) in Indonesia (Levy, 1996).

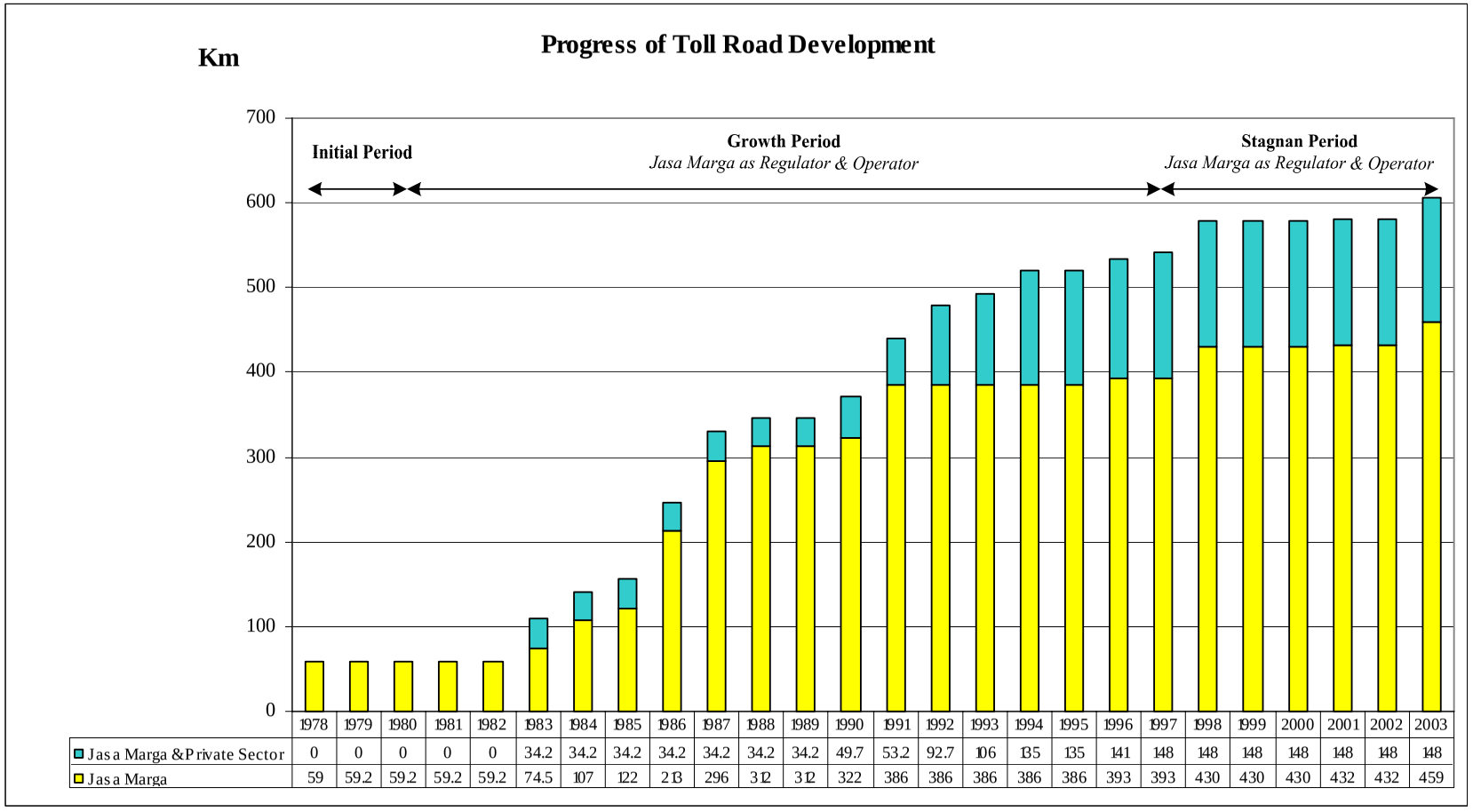
However, Johansen (1989) reported that it was proving difficult to mobilize private funds to finance toll road during this period. Two of the sections under construction were under private concessions from a legal point of view but in actual fact were financed through loans and equity contributed by Jasa Marga. In addition, concessions in Indonesia toll road appeared to be risky: even high toll rates authorized did not ensure cost recovery given high road standards adopted and limited traffic using toll roads even when alternate un-tolled roads are congested. Projects with foreign participation had proven elusive. As a result, the construction program lagged behind plans. The progress of toll road development is presented in Figure 2-1.

2.3.3 Liberalization of Toll Roads

Due to the economic crisis from 1997 to the end of 2001 in Indonesia, the construction of toll roads experienced stagnation. As shown in Figure 2-1, Jasa Marga operated and managed toll roads with a total length of 393 km in 1997, while the total length of toll roads operated both by Jasa Marga and investors was 135 km. In 2001, the total length of existing toll roads was 580 km; Jasa Marga managed 432 km toll roads, while 148

km was in cooperation with the private sector. The recovery of the development of toll roads in Indonesia happened in 2003. At that time, Jasa Marga operated and managed toll roads in Indonesia with a total length of 607 km; with 459 km (75.6 %) being managed exclusively by Jasa Marga; the remainder is operated jointly by Jasa Marga and other investors (Directorate General of Regional Infrastructure, 2005). This recovery was indicated due to the completion of several toll road sections on which work had been postponed since the economic crisis, such as the Jakarta Outer Ring Road (JORR).

To improve the long-term financial stability of toll road development, the government has already made efforts to attract more investors through governance and legal reforms, such as the revision of Law No. 13/1980, which has now become Law No. 38/2004 about Roads. Due to the implementation of this new Law, the Indonesian government began the liberalization of the toll road sector by separating the functions of regulator and operator, both of which had been held by Jasa Marga. The previous structure had often led to conflicts of interest and was perceived to be less conducive to investment in toll road projects in Indonesia.



	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Jasa Marga &Private Sector	0	0	0	0	0	34.2	34.2	34.2	34.2	34.2	34.2	34.2	49.7	53.2	92.7	106	135	135	141	148	148	148	148	148	148	148
Jasa Marga	59	59.2	59.2	59.2	59.2	74.5	107	122	213	296	312	312	322	386	386	386	386	386	393	393	430	430	430	432	432	459

Source: *Directorate General of Regional Infrastructure. Ministry of Public Works. Presented in Indonesian Infrastructure Summit, Jakarta, 2005.*

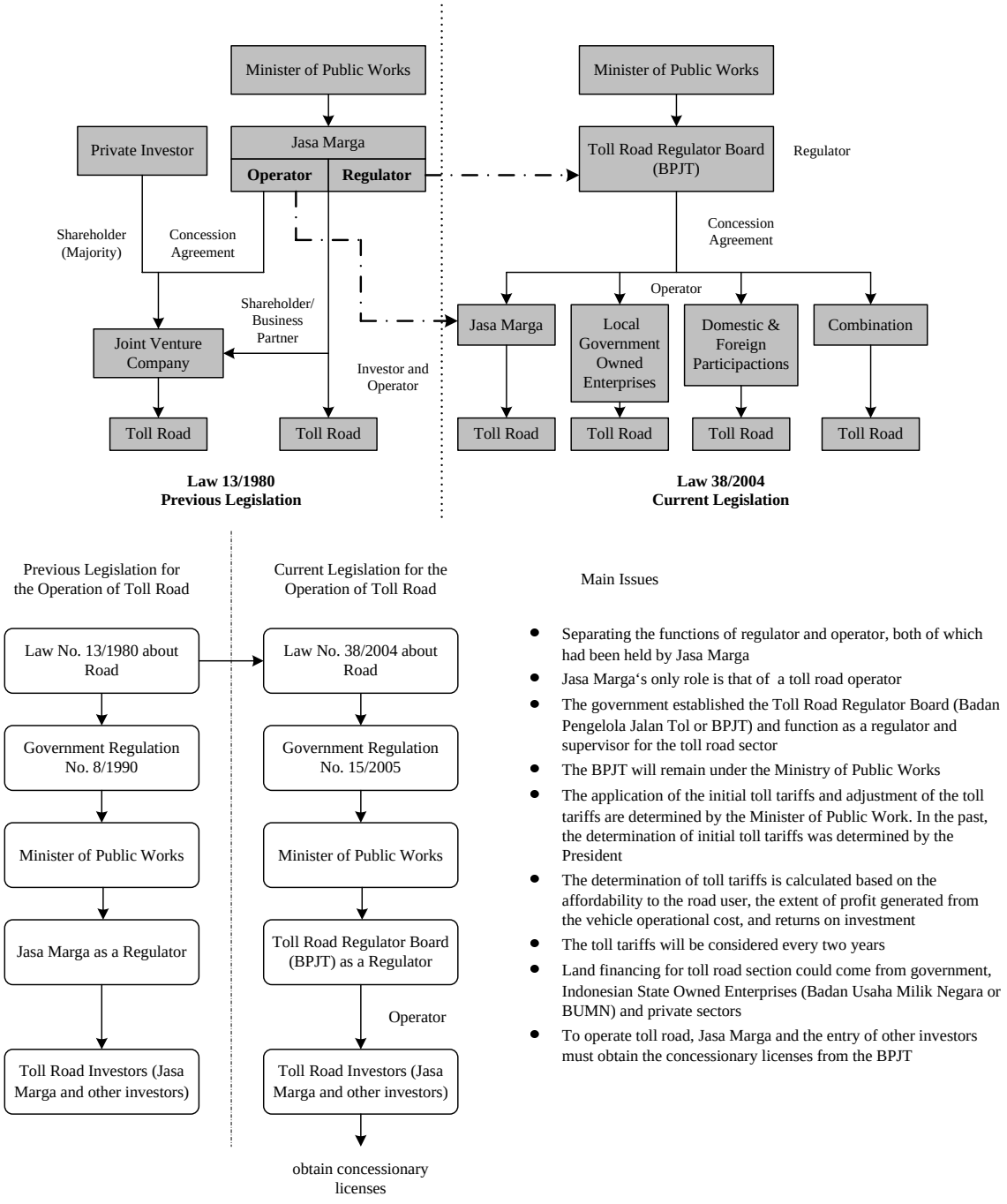
Figure 2-1 Progress of Toll Road Development

Subsequently, the government established the Toll Road Regulator Board (BPJT) to act as a regulator and supervisor for toll road operations and services. So currently, Jasa Marga's only role is that of a toll road operator. Jasa Marga will experience an increasingly competitive business climate with the entry of other investors seeking to obtain concessionary licenses from BPJT to operate the toll road network. The BPJT manages the toll road business and encourages the involvement of the private sector in new toll road projects. It will remain under the Ministry of Public Works. The preliminary negotiation for the tariffs and concession periods will be carried out by the BPJT based on input from the toll operator. The board also has responsibility to take over the toll roads after the completion of the concession period, and provide facilities for investment and land clearance.

The government ensures that the evaluation and adjustment of the toll tariff will be carried out once every two years based on the rate of inflation. The application of the initial toll tariff and adjustment of the toll tariff is determined by the Minister of Public Works. In the past, the determination of initial toll tariffs was determined by the President. The new law also promises a more investment friendly climate. For example, the toll tariff will be announced once the business plans have been submitted, while in the past; the tariff was only announced when the project construction had been completed. According to government plans, it is intended that the private sector will be the key driver of investments in toll roads (Infrastructure Summit and Exhibition, 2005).

Minimum service standards for toll roads, which were stated in Ministerial Regulation of Public Works No. 392/2005, have also been developed by the government. These standards must to be achieved by a toll road operator in order to assure customer

service. They include more covering toll road condition, average traffic speeds, accessibility, mobility, safety, as well as emergency service (BPJT, 2005). Restructuring of toll road operation in Indonesia is depicted in Figure 2-2.



Source: Directorate General of Regional Infrastructure, presented in Indonesian Infrastructure Summit

Figure 2-2 Restructuring of Toll Road Operations

2.4 Public Roads in Indonesia

Roads as part of the transportation infrastructure play an important role in the economy, social culture, environment, politics, defense and security of a country. Public roads in Indonesia are classified based on system, function, class, and status as set out in Government Regulation No. 26/1985 about Regulation on Roads and Law No. 13/1980 about Roads. The road network system in Indonesia is divided into primary and secondary road network systems. Based on function, roads can be divided into arterial roads, collector roads, local roads, and neighborhood roads. Public road can also be categorized by class as freeways, highways, roads, and streets. Based on the status classification, the public road is divided into national roads, provincial roads, and district/municipal roads. Table 2-2 shows how the road network in Indonesia is classified.

Table 2-2 Classification of Roads in Indonesia

<table>
<tr><th>Road Network System</th><th>Administration Classification</th><th colspan="2">Functional Classification</th><th>Authorized Institution</th></tr>
<tr><td rowspan="5">Primary System</td><td rowspan="2">National Roads</td><td colspan="2">Arterial</td><td rowspan="2">Central Government</td></tr>
<tr><td rowspan="3">Collector</td><td>Class 1</td></tr>
<tr><td rowspan="2">Provincial Roads</td><td>Class 2</td><td rowspan="2">Provincial Government</td></tr>
<tr><td>Class 3</td></tr>
<tr><td rowspan="2">District Roads</td><td>Class 4</td><td rowspan="2">District Government</td></tr>
<tr><td colspan="2">Local</td></tr>
<tr><td rowspan="3">Secondary System</td><td rowspan="3">Urban Roads</td><td colspan="2">Arterial</td><td rowspan="3">Municipal Government</td></tr>
<tr><td colspan="2">Collector</td></tr>
<tr><td colspan="2">Local</td></tr>
<tr><td colspan="5">Class 1 : Connecting between provincial capital
Class 2 : Connecting provincial to district/municipality capitals
Class 3 : Connecting between district/municipality capitals
Class 4 : Connecting district/municipality capital to other areas</td></tr>
</table>

Source: *Government Regulation No. 26/1985 and Law No. 13/1980*

2.5 Budgeting Process for the Road Network in Indonesia

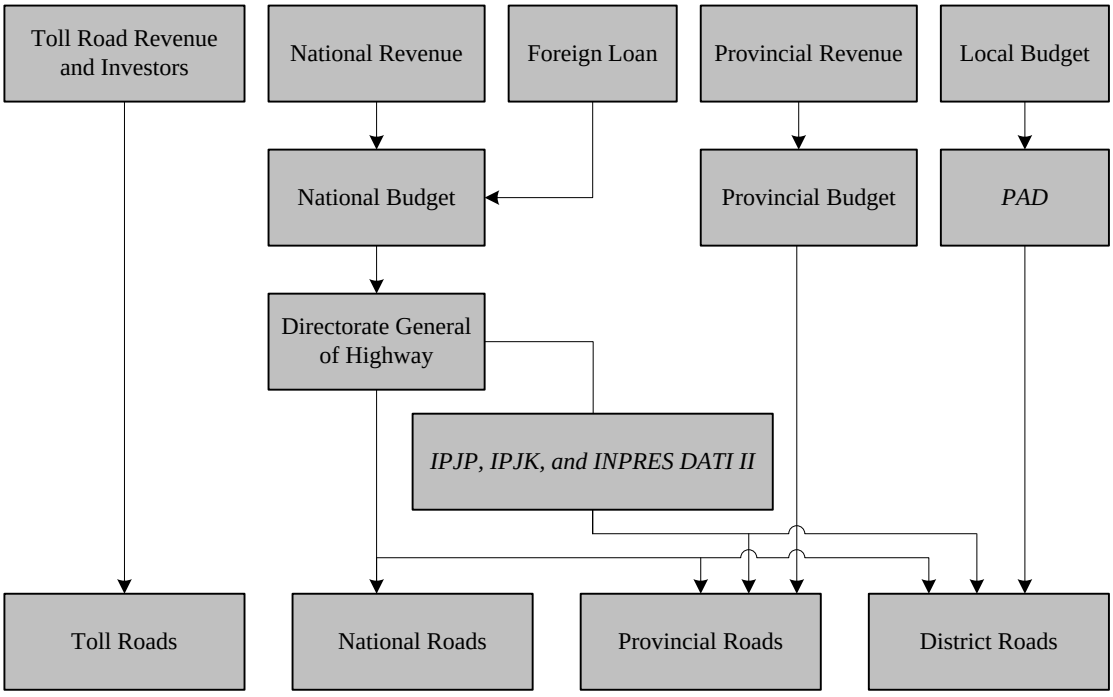
Due to the implementation of the decentralization policy in 2001, the maintenance of national and provincial roads is carried out by provincial government road agencies

(Dinas Bina Marga, Propinsi) or the highway departments of provincial public works agencies *(Sub Dinas Bina Marga)* (Kusbiantoro, 2003). Funds for the national road maintenance budget come from central government's funds *(Anggaran Pendapatan Belanja Negara/APBN)* whilst those for the provincial road maintenance budget come out of regional government funds (APBD) and central government's grants to provinces for road works *(Inpres Peningkatan Jalan Propinsi/IPJP)*.

With the promulgation of Laws No. 22/1999 and 25/1999 on January, 2001, Indonesia has transformed its system of governance from a centralized policy to a decentralized one (Suharyo, 2002). Due to the implementation of fiscal decentralization, local governments *(kabupaten)* have received a high degree of autonomy in determining and implementing the regional policy, the structure of the local administration and the priorities for district public expenditure. The local public expenditures are covered by general and special allocation funds *(Dana Alokasi Umum dan Dana Alokasi Khusus)*, tax and non-tax share transfers, and local government own-source revenue *(Pendapatan Asli Daerah/PAD)*. The local government own-source revenue consists of the revenue from local taxes *(pajak)*, local levies and fees *(retribusi)*, and local government corporate profit (Ministry of Home Affairs and Regional Autonomy, 2001).

The budgeting process for local roads construction and maintenance come from two sources, i.e. local government own-source revenue and central government's grants (Hermawan, 2000). Central government's grants have been available since 1979/1980 and are obtained from two presidential decrees *(Instruksi Presiden/INPRES)* grant allocations (Ford, 1999). One source was from the central government's grants to *kabupaten* for road construction *(Inpres Peningkatan Jalan Kabupaten/IPJK)* and the

other from the presidential decree for regional levels *(Instruksi Presiden Daerah Tingkat II/Inpres Dati II)* for road maintenance. *Inpres Dati II* is also a per-capita allocation to *kabupaten* for general expenditure. The *IPJK* grants were subsequently introduced as a means of providing more funding to develop the roads in low density population *kabupatens* (ADB, 2002). The budgeting process of toll and public roads in Indonesia is presented in Figure 2.2.



Source: *The Ministry of Public Works, Indonesia*

Figure 2-3 Budgeting Process for the Road Network in Indonesia

2.6 Types of business organizations owned by the Indonesian Government

According to Law No. 12/1967, the types of business organizations established and owned by the Indonesia government include state limited liability company (Persero), government agency (Perjan), and public corporation (Perum).

Persero (state limited liability company) is wholly or partly owned and controlled by the government, represented by the Minister of Finance, subject to the Indonesian Commercial Code. It is technically supervised by the relevant Ministry.

Perjan (government agency) is established and owned by the central government as a non profit organization to operate the main public utilities under the relevant department; it is financed out of the government budget.

Perum (public corporation) is also established and owned by the central government to operate public services. It does not get government subsidies and is supposed to generate its own financial profits. The corporation is technically guided by the relevant line department, and financially is controlled by the Ministry of Finance (Pangestu, 1996).

2.7 The Road as an Asset

An efficient road transport system is a necessary precondition for general economic development, and significant resources are devoted to road construction and improvements (Robinson et al., 1998). Road networks have an asset value that represents a significant contribution to national wealth; at the same time, the road transport sub-sector makes a significant proportion to the gross national product (GNP). Road management can be seen as a process that attempts to optimize the overall performance of the road network as an economic asset.

Therefore, it is important that this asset is managed in a business-like manner. A highway organization could consider the concepts and practices of Transportation Asset Management (TAM) as a systematic process of operating, maintaining, and physically upgrading assets in a cost-effective manner. TAM combines engineering

and mathematical analyses with sound business practice and economic theory (Bittner et al., 2004). The total asset management concept expands the scope of conventional infrastructure management systems by addressing the human element and other support assets as well as the physical plant (e.g., highway, transit systems, airports, etc.). Asset management systems are goal driven and, like the traditional planning process, include components for data collection, strategy evaluation, program development, and feedback. Its purpose is to maximize the benefits of a transportation program to its customers and users, based on well-defined goals and with available resources. Most highway agencies currently have some of the more common elements that provide information into the asset management process. The two most common are pavement management system (PMS) and bridge management system (BMS). The PMS was a precursor of today's asset management system which is taken to encompass both PMS and BMS.

2.7.1 Pavement Management System

A PMS has long been considered a programming tool that collects and monitors information on current pavement, forecast future conditions, and evaluates and prioritizes alternatives reconstruction, rehabilitation, and maintenance strategies to achieve the 'steady state' of system preservation at a predetermined level of performance (U.S. Department of Transportation, 1999). The PMS consists of a set of tools or methods that assist decision-makers in finding optimal strategies for providing, evaluating, and maintaining pavements in a serviceable condition over a period of time (AASHTO, 2001, 1993; Delaware DOT, 2000). The PMS includes a technique for evaluating pavement performance on a routine basis. Highway organizations in order

to operate within their budget limits use the PMS to identify pavements most in need of design, rehabilitation and maintenance.

The evaluation of pavement performance is a significant part of pavement design, rehabilitation, and management, and is required to determine the optimum maintenance treatment. The objective of evaluating pavement performance is to measure how well a pavement is serving road users. The functional purpose of a pavement section is to provide a smooth, comfortable and safe ride. A comprehensive evaluation of a pavement section should include surface distress, roughness, deflection, and surface friction as indicators.

Surface Distress: Distress is one of the major considerations in the design of pavements and its evaluation is an important component of an effective pavement management system. Knowledge of the various types of distress is important to identify the causes and patterns of different types of pavement distress.

Roughness: Roughness is widely used as an indicator of pavement performance with respect to the quality of road surface profile. It is also used as an indicator for the ride quality and pavement serviceability. Roughness indicates the degree of irregularity of the road surface that adversely affects ride quality, safety, and vehicle maintenance costs. It increases the dynamic loadings imposed by vehicles on the surface, accelerates the deterioration of the pavement structure, has adverse effects on surface drainage, and causes water to pond on the surface, thereby causing adverse impacts on both the pavement performance and vehicle safety.

Haas et al. (1994) defined roughness as the distortion of the pavement surface that contributes to an uncomfortable ride. Roughness evaluation requires measurement of

the longitudinal profile of the pavement in the wheel path. The degree of roughness is dependent on the amplitude and frequency or wave lengths of the pavement distortions. The World Bank has developed the International Roughness Index (IRI) as a standard measure of roughness which was established through international cooperation and is transferable worldwide and applicable to all measuring instruments (Paterson, 1987). The IRI summarizes the longitudinal surface profile in the wheel path of a traveled road surface. It is computed from surface elevation data collected by either a topographic survey or a mechanical profilometer. Full details of the computation of the IRI, and guidelines for conducting and calibrating road roughness measurements are given by Sayers et al. (1986).

Deflection: Knowledge of the material properties of pavement layers is important for evaluating the structural capacity of in situ pavements. Nondestructive and destructive tests have been used for field testing and evaluating the structural capacity of pavements. Many highway organizations use nondestructive testing for pavement by evaluating the pavement deflections. Nondestructive testing can be carried out by three types of equipment: static or slowly moving loads, steady-state vibration, and impulse loads (Huang, 2004). Many devices are used to perform nondestructive testing (NDT) on pavements. Commercially available devices for this testing are the Dynaflect, Road Rater and Falling Weight Deflectometer (FWD). The latter device is commonly used in many countries and considered as the best device for nondestructive testing.

Surface Friction: Pavement characteristics relate to both the comfort and safety of drivers. They have significant effect and interact with the roadway, driver, vehicle and weather to cause skid accidents. Pavement surfaces should have adequate friction

between vehicle tires and pavement surface to ensure satisfaction and safety of the driving public, as well as create resistance to skidding of vehicles.

2.7.2 An Overview of Road Maintenance

Road maintenance is defined as appropriate routine, periodic and urgent activities to keep pavement, shoulder, slopes, drainage facilities and all other structures and property within the road margins as near as possible to their as-constructed or renewed condition (PIARC, 1982). Road maintenance is vital to keep the road reserve in an acceptable condition; maintain road safety and aggregation; prolong the functional and structural life of the pavement; and repair functional pavement deficiencies.

PIARC (1982) defines routine maintenance as operations that are continually required on every road. These operations are typically small-scale or simple, but widely dispersed, and may require skilled or unskilled manpower. The activities include vegetation control, routine lane markings, drain clearing, bridge and culvert maintenance.

Periodic maintenance is defined as non-structural works that are occasionally required on a section of road after a number of years. Periodic maintenance normally needs professional equipment and skilled resources. This type of maintenance is used to prolong the road life, increase the road performance, and reduce user delays. Periodic maintenance includes resealing (with surface dressing, ultra thin asphalt, etc) of paved roads, and re-gravelling of shoulders for paved and unpaved roads.

Emergency maintenance is performed beyond routine and periodic maintenance. This maintenance type indicates activities associated with the urgent repair of deficiencies caused by natural disaster or accidents. Examples of emergency maintenance are

cleaning spillages, replacement of damaged guard-rails and road signs at critical positions, repair of washouts, rock or earth slides, removal of dead animals and tress, and clearing of accident sites.

2.7.3 Purpose of Road Maintenance

Road maintenance can reduce the rate of pavement deterioration. It also lowers the cost of operating vehicles on the road by improving the running surfaces, as well as keeps the road open on a continuous basis (World Bank, 1988). Besides the above benefits, Robinson et al. (1998) also cited safety and environmental benefits for road maintenance.

Reducing deterioration: The combined effects of the traffic loading, pavement strength and quality, and climate and environment will cause pavements to deteriorate over time, even with adequate maintenance. There will be a need for pavement reconstruction or upgrading if the end of the design life of a pavement is reached. Surface defects will worsen resulting in water penetrating the structure of the pavement if the required maintenance is not conducted. Consequently, a higher level of maintenance is needed prematurely. Failure to perform resurfacing maintenance at the appropriate time soon leads to more costly work on strengthening the overlay, which is at least twice as expensive as resealing. Then, if this overlay is not carried out in time, major deterioration sets in and pavement reconstruction will be required, which is at least three times more expensive than an overlay.

Lowering vehicle operating costs: Cost savings obtained by deferring the need for rehabilitation do not take into account the deterioration of vehicles caused by the resulting bad pavement surfaces. If maintenance funds are decreased, the pavement

will start to crack, and pot-holes will gradually appear. At this point, vehicle operating costs (VOC) could be expected to increase by about 15 percent. If maintenance is neglected, the pavement will eventually start to disintegrate and VOC will increase by about 50 percent.

Safety: Road safety has become a major concern and has proved to be an important aspect of road transport. Education, enforcement, and engineering are the factors contributing to road safety. In this context, road maintenance activities provide an opportunity for making improvements to road safety by contributing to engineering factors in the area of: pavement and footway surfaces; carriageway markings and delineation; signs, street lights and road furniture.

Keeping the road open: Another reason for conducting road maintenance is to keep the road open continuously. If the road deterioration requires rehabilitation, roads will be unusable when the works are carried out.

Environmental issues: The World Bank indicated that the condition of roads has an effect on the environment (World Bank, 1994). Roads in poor condition will lead to wasted non-renewable resources and contribute to air pollution from vehicles that are not operating efficiently.

2.8 Performance Measurement

Performance measurement has been recognized as a critical business success factor. Bassioni et al. (2004) reported that performance measurement has been the subject of a considerable amount of research and attention over the past 15 years. Knowledge and adoption of performance measurement has dramatically spread throughout the economy including the transportation sector. There has been considerable interest in

the implementation of the performance measurement concept, as discussed by Chandler (1977), Kaplan (1984), and Bassioni et al. (2004) who reported the use of planning and control procedures by U.S. railroads as early as the 1860s and 1870s. In Hong Kong, Tam and Hui (1996) described how experiences in the Kowloon Canton Railway Corporation (KCRC) shows the viability of applying Total Quality Management approach to develop an internal customer satisfaction index as a tool for continuing quality enhancement, to identify areas for improvement, and to provide a systematic way to lift quality awareness. Closer to the subject of this thesis has been the implementation of performance measurement in highway maintenance discussed in Otto and Ariaratnam (1999).

Otto and Ariaratnam (1999) developed ideas for performance measures in highway maintenance operations. Examples of measures for several highway maintenance activities were developed and include for these snow removal and ice control, repairs to accident damage (i.e., sign replacement and guardrail repair), emergency road or lane closures, crack sealing, patching, vegetation control, and culvert repairs. The study examined the general theories of performance measurement systems, based on current conditions and practices in the province of Alberta, Canada. Extra considerations on a performance measurement system apply when private companies operate under contract to a public agency to perform the work. Poister (1997) presented data on the degree to which state Departments of Transportation (DOTs) have developed and implemented performance measures. Poister described how performance measures have evolved in several state DOTs, the types of initiatives that have been developed, and the effectiveness of such measures in assessing performance and improving productivity, as perceived by the departments. Examples and terminology mentioned above refer to public service transportation agencies.

A performance measurement framework derived from an organization's vision, mission, and strategy is very important for an organization to survive and succeed in an era of information competition. Performance measurement is central to the execution of business strategy. Performance measurement provides feedback on the effectiveness of the organization's strategy and its realization (Chow et al., 1998). The organization is able to analyze the gaps in performance and make adjustments if outcomes differ from objectives (McNair and Leibfried, 1992).

The performance measurement system should (1) support the organization's strategic objectives and vision, (2) evaluate the effectiveness of goods or services provided, (3) benchmark against its own past performance or against the current performance of other agencies, (4) have an influence on management policies and budget decisions, (5) evaluate the end-user satisfaction with the service provided by the agency, as well as (6) have a feedback mechanism to improve the operation of the measurement system, or to analyze the outputs and outcomes against the agency's goals (Otto and Ariaratnam, 1999). One such performance measurement system is the Balanced Scorecard approach. The Balanced Scorecard translates an organization's vision and strategy into a comprehensive set of performance measures that provides a framework for strategic performance measurement.

2.9 The Balanced Scorecard

Harvard Business Review describes the Balanced Scorecard as one of the most influential business ideas of the past 75 years and the Balanced Scorecard is estimated to be applied by 40% of the Fortune 1,000 companies at the end of 2001 (Marr, 2001). The Balanced Scorecard is designed to complement measures of past performance (lagging indicators) with measures of drivers of future performance (leading indicators)

as well as give a balanced presentation of both financial and operational measures by adding three non-financial perspectives, thereby allowing managers to know their business performance based on four key perspectives.

The financial perspective focuses on the objectives of enhancing revenues, improving cost and productivity, increasing utilization, and reducing risk. The customer perspective focuses on focus externally on the customer to provide better value that the customers want and need. The internal perspective focuses on the strategic priorities for various business processes that are most critical for achieving customer and shareholder objectives. Finally, the learning and growth perspective focus on the organization's people, systems and organizational alignment and how the organization can improve and create value.

The objective of a Balanced Scorecard is not just to develop a new set of performance measures. However, the performance measurement framework in the Balanced Scorecard could also be used to develop a strategic management system. This difference between a performance measurement and a management system is subtle but important. The measurement system is a way to achieve an even more important objective, while a strategic management system is able to help executives of a company implement and gain feedback about their strategy. This means that the balanced measurement system had evolved to become a core management system that helps business units implement their vision and strategy. Organizations use the Balanced Scorecard to achieve their strategy over the long run since the approach aligns and supports critical management processes that (1) clarify and translate vision and strategy into strategic objectives and measures, (2) link the strategic objectives and

measures and communicate them throughout the organization, (3) plan, set targets, and align strategic initiatives, as well as (4) enhance strategic feedback and learning.

It is essential that the scorecard is designed in a way that accurately reflects the organization's strategy. Therefore, the design of a good Balanced Scorecard should be based on three principles that link the measures to strategy, namely, cause-and-effect relationships, performance drivers, and linkage to financials.

1. Cause and Effect Relationships: Every measure selected for a Balanced Scorecard should be part of a link of cause and effect relationships that that represent the organization's strategy.
2. Outcomes and Performance Drivers: A good balanced Scorecard should have an appropriate mix of outcomes (lagging indicators) and performance drivers (leading indicators) that have been customized to the business unit's strategy.
3. Linkage to Financials: The cause and effect relationships from all the measures on a scorecard should be linked to financial objectives.

The Balanced Scorecard has been studied or applied by several state Departments of Transportation (DOTs) in the United States as part of their management renewal or quality improvement initiatives. For example, the Montana DOT developed a Balanced Scorecard as an approach to determine the organization's business objectives and measure progress toward attaining the organization's business. The balanced scorecard in the Montana DOT provides a quantifiable method of evaluating the organization and examining its needs based on four perspectives, namely, financial, customer, internal business, and learning and growth perspectives. However, this business plan focuses on organizational performance rather than the delivery of transportation services (Pagano et al., 2004).

Doyle (1998) describes the implementation of the Balanced Scorecard approach by the Texas DOT. The Balanced Scorecard in the Texas DOT is used to monitor performance in support of the department-wide strategic plan, as well as at the division and district level in conjunction with their more operational strategic plans. The Balanced Scorecard has been modified by using two dimensions of measurement internal versus external as well as and process versus results, namely, external-results, external-process, internal-process, and internal-results perspective.

Furthermore, the implementation of the Balanced Scorecard by the Charlotte, North Carolina DOT for making and managing its strategic plan was studied by Poister and Streib (1999). In Charlotte, the city council and city manager implemented the Balanced Scorecard as a strategic management system for the entire city government, defining strategic objectives for each of the four scorecard perspectives. Subsequently, the Balanced Scorecard at the city level was translated into a linked scorecard at the Charlotte DOT level. In its own strategic planning process, the Charlotte DOT identified strategic objectives for each of the four perspectives which incorporated or supported several of the citywide objectives to assure that departmental objectives were aligned with city council priorities. For each of these objectives, the Charlotte DOT identified performance drivers (leading indicators) that provide early indications of success, and outcome measures (lagging indicators) that reflect the resulting performance. Examples mentioned above refer to public service transportation agencies in the United States. However, the Balanced Scorecard approach is still not widely known in the corresponding toll road agencies in Indonesia.

As discussed in the present part of this chapter, the business environment of toll roads in Indonesia has been evolving in line with globalization and Indonesia opening up its

infrastructure sector to domestic and foreign participation. This has transformed the role of Indonesia's state-owned toll road operator, Jasa Marga which will face increasing competition with the entry of other investors. As such, Jasa Marga must work on implementing organizational change in order to adapt to its changing environment and meet the competition.

This study will look into the theories and application of the Balanced Scorecard as a performance measurement and strategic management system in semi-autonomous government linked toll road operators like Jasa Marga. The Balanced Scorecard approach will bring in additional perspectives for performance management relating to the financial and organizational development aspects, beyond the engineering aspects existing in traditional Pavement Management System. The context of this study is provided by a semi autonomous government linked company involved in the operation of a toll road network, using information reported by Jasa Marga.

CHAPTER III

RESEARCH METHODOLOGY

3.1 Overview

Chapter 3 provides in more detail an overview of Jasa Marga and the methodology adopted in this study. It also provides the background behind the development of the questionnaires employed in the study, as well as the implementation of Balanced Scorecard approach in Jasa Marga.

3.2 An Overview of Jasa Marga

Jasa Marga is a state-owned corporation that was started in 1978 on expressway sections serving the capital city. In the 1980s and early 1990s, Jasa Marga activities were focused on the development and expansion of toll road network. In 1989, 11 sections totaling 280 km and 6 bridges were tolled, in which more than half of the length served in Jakarta. Three toll road sections totaling some 70 km were built gradually until 1992 with a total cost of some US$ 350 million that is equivalent to US$ 5 million per kilometer on average (Johansen, 1989). Currently, Jasa Marga operates and manages toll roads in Indonesia with a total length of 459 km.

Jasa Marga has played an important role in (1) providing toll roads without placing a burden on the state budget, (2) supporting the industry and trade sectors, (3) collaborating the solidifying of the national defense and security, (4) supporting the tourism sector by providing comfortable roads, and (5) improving traffic disciplinary

by providing better condition of traffic facilities and traffic signs on toll roads (Kasudarman, 1998).

Jasa Marga's vision is becoming a professional, leading and reliable company in toll road management within the national development framework, while its missions are as follows:

1. providing optimum service to the toll road users;
2. developing and operating feasible toll road projects to support national development;
3. developing sustainable growth of the company through professional and prudent management;
4. conducting a systematically directed development to employees and organization; and
5. running business by considering the public interest as well as the environment.

However, in spite of its establishment in 1978, Jasa Marga still lacks experience in collecting and monitoring information, forecasting future conditions, and prioritizing alternative maintenance strategies on current toll roads to accomplish a steady state of system preservation at a predetermined level of performance (e.g., a goal). In the past, the toll road management system in Indonesia was determined by the subjective judgment of decision makers, resulting inefficiency from the economic point of view. To improve the management system, Jasa Marga has proposed the development and implementation of a new Toll Road Maintenance Management System (TRMMS). The TRMMS is a systematic process of maintaining, upgrading, and operating toll roads cost-effectively. It combines engineering principles with economic theory and sound

business practice, as well as provides tools to facilitate a more organized, logical, and justifiable approach to decision-making.

The TRMMS has been the subject of attention by Jasa Marga over the past 10 years. From 1983 to 1985, the characteristics of Jasa Marga and its operational resources have been studied and reviewed by the New Jersey Turnpike in order to strengthen the organization's performance and develop maintenance management practices. This was summarized as the technical assistance and training in toll road management for Jasa Marga. In 1991, the fundamental concepts of toll road design, quality control and maintenance management system have been reviewed by Roadtec Resources Consultant. This was a starting point for the development of TRMMS. A system structure of TRMMS was studied by Bandung Institute of Technology (ITB) in 1994, and has been implemented by Jasa Marga since 1998.

In early development, TRMMS had technical problem. The concept of TRMMS was not well advanced. Software development was very expensive and time consuming. During the implementation of the system, the major problems were:

1. complexity of the system: the manual book in the TRMMS provided inadequate information; while there was complexity of the system so that the users have difficulty to understand the system;
2. one person show: The use of TRMMS were concentrated in one divisions. So that when the user of the TRMMS leave their responsibility to be transferred to another post outside of the division as a result of promotion. TRMMS implementation may obstruct for several weeks or months until the post is filled. Consequently, the new user would start from the beginning of TRMMS system;

3. reluctant to use: the system was developed by the external consultant. Consequently, some database engineers are reluctant to use the system, because they were not familiar yet with the system; and
4. resistance to change: the implementation of TRMMS requires some changes in job description, however there is organizationally unsuited to rapid change at that company.

There are no fast solutions to manage these problems. One of the methods for removing the problems is training. The key issue for the successful implementation of TRMMS is personnel training from top management to field engineer and road inspector level. It is divided into four levels of personnel training activity as describe below:

1. Management; including all top management who responsible for the most important decisions of organization.
2. General coordination and data analysis; including all staff who responsible to coordinate field surveys, identify maintenance needs, and process data at central and branch level.
3. Field engineers; responsible to identify road distress.
4. Road inspector; responsible in taking measurements and operating and to maintaining field inspection equipment.

The implementation of the TRMMS has resulted a comprehensive database of road system information, presenting the basis for cost effective preventive road maintenance to be carried out. The TRMMS is conceived to provide sound methods for estimating cost, budgets and resource required for maintenance, and to allocate funds in a rational way to the various maintenance tasks with budgetary constraints in Jasa Marga.

However, due to limitations in its financial and human resources, Jasa Marga has experienced problems in highway maintenance operations such as inefficiency, ineffectiveness of internal processes, and higher operational costs. The problems become more complicated since the toll road user demand improvements in accountability and quality service level in toll roads, and more importantly, in line with globalization and Indonesia opening up its infrastructure sector to domestic and foreign participation. Jasa Marga will experience an increasingly competitive business climate with the entry of other investors seeking to operate the toll road network. To adapt changing environment and meet the competition, Jasa Marga must work on implementing organizational change.

3.3 Performance Measurement in Jasa Marga

Jasa Marga has implemented the Key Performance Indicators (KPI) approach in its performance measurement. The KPI are a set of data measures used to evaluate the company's performance. A KPI is a metric or systematic estimate of the performance of an individual business function or activity that is critical to the performance of an organization. The KPI will differ depending on the organization's core business. The KPI used by Jasa Marga are classified into three categories, namely, operational, financial, and dynamic indicators. **Operational indicators** focus on the company's business processes related to external and internal organization. **Financial indicators** serve as the ultimate targets for the strategic objectives and performance measures of organizational performance. The financial objectives in this perspective typically relate to profitability, revenue and asset value. Every measure selected in this performance measurement is considered to enhance long term sustainable financial performance.

Dynamic indicators develop objectives and measures to drive organizational learning and growth.

As shown in Table 3.1, the company already has a performance measurement system that incorporates a mixture of financial and non-financial measures. The KPI have allocated resources for employee education and training. However, the KPI do not link skill development and training of employees to its long-term plans and strategies. The KPI do not measure the human resource dimensions of its organization, such as employee satisfaction, employee capability, working relationship between employees, as well as employee empowerment and motivation.

The company also routinely conducts surveys among its toll road users about its services. Toll road user complaints are systematically analyzed in this company. Then, the company translates toll road user needs into service and process improvement. However, the KPI also do not provide the government perspective in the indicators. Consequently, the KPI can not measure the views of government in assessing toll road service provided by the company.

In terms of ride quality for toll road users, roughness is used by this company in its performance measurement as an indicator for ride quality and pavement serviceability. To provide a standard measure of roughness for the branch office of Jasa Marga, the company adopts International Roughness Index (IRI) as a measure. The IRI summarizes the longitudinal surface profile in the wheel-path of a traveled road surface. It is expressed in units of meters per kilometer (m/km). Road safety has also become a major concern for this company. Pavement surfaces in the toll road networks are maintained by the company to have adequate friction between vehicle tires and pavement surface to ensure safety of the driving public and create resistance to

skidding of vehicles. The company uses surface friction as an indicator. Other measures used by the company to assess road safety are fatality and accident rate, which is indicated by number of people killed and accidents on toll road per 100 million vehicle km traveled, respectively.

To motivate employees, recognition is also connected to achievement of the KPI targets. The company tied 50 % of the recognition to operational performance, and based the remaining 50 % of the recognition on indicators drawn from the financial and dynamic perspectives. This strategy has the obvious advantage of aligning the interests of the top and middle managers with achieving the company's strategic objectives.

To communicate the need for organizational change, the company has also established targets for its performance measures. These targets enable the company to measure the long-term outcomes it wishes to achieve, and to plan for the provision of resources for achieving those outcomes. However, due to reasons of commercial sensitivity, the performance targets are not presented in this study.

The KPI also focus on the objective of implementing Good Corporate Governance. This includes the relationship among various stakeholders determining the company's strategy and objectives. Jasa Marga is guided by the Ministerial Decrees of BUMN No. 117 year 2002 about the Implementation of Good Corporate Governance Practices on Indonesian State Owned Enterprises in accordance with the standard of Financial and Development Supervisory Board (BPKP). However, strategic objectives and outcome measures selected for these KPI do not include the cause-and-effect relationships that link elements from one indicator to another. The KPI also do not provide an appropriate mix of performance drivers (leading indicators) and outcome measures

(lagging indicators). Lagging indicators without leading indicators do not communicate how the outcomes are to be achieved. Consequently, the KPI do not provide an early indication about whether the strategy is being implemented successfully. Finally, the employees may not recognize that the company objectives can also be affected by their decisions and actions.

The results of the questionnaire survey, as well as a discussion of the feedback received from top key members of the company in assessing their company's existing performance measurement will be presented in Chapter 4.

Table 3-1 Jasa Marga's Key Performance Indicators

KPIs	Weight (%)	Objectives	Measures
Operational Indicators (50 %)	8	1. Increase revenue	1. Revenue (Rupiah)
	6	2. Increase employee productivity	2. Revenue/employee
	6	3. Reduce additional cost of head office for branch	3. The additional cost of head office/the total cost for branch
	5	4. Reduce maintenance cost	4. Spend money (Rupiah) for maintenance cost/kilometer of toll road network
	5	5. Increase service for toll road user	
		• Reduce transaction service time	• Queuing time for transaction service/vehicle
	5	• Reduce accident rate	• Accident rate
	5	• Reduce fatality rate	• Fatality rate
	5	• Roughness	• m/km
	5	• Surface Friction	• µ m
Financial Indicators (35 %)	6	1. Increase Free Cash Flow [EBITDA – interest payments – total current liability – sinking fund]	1. FCF value
	8	2. Increase Return on Asset [ratio between (net profit minus tax) and asset value]	2. ROA value
	8	3. Increase Return on Equity [ratio between (profit minus tax) and own capital]	3. ROE value
	5	4. Increase Interest Coverage Ratio [ratio between (profit + depreciation) and interest payments]	4. ICR value
	4	5. Decrease Debt to Equity Ratio [ratio between total debt and total equity]	5. DER value
	4	6. Increase Time Interest Earned [ratio between profit and interest payments]	6. Time Interest Earned value
Dynamic Indicators (15 %)	2	1. Increase other revenues	1. Revenue (Rupiah)
	5	2. Implement Good Corporate Governance (GCG)	2. GCG level (%)
	5	3. Increase the length of toll roads operated by Jasa Marga	3. Kilometer (km)
	3	4. Increase the amount of money spent in human resources development	4. Rupiah/employee

Source: Key Performance Indicator (KPI), BUMN Jalan Tol/PT Jasa Marga (Persero), 2005

3.4 The Process of Balanced Scorecard Development

Kaplan and Norton (1996) suggested a four-step process that has been used to implement Balanced Scorecard in several different organizations; although there are several alternative approaches of developing a Balanced Scorecard because every organization is unique and may wish to follow its own path for creating the Balanced Scorecard according to its organization needs. The four-step process suggested by Kaplan and Norton describes a typical and systematic development plan. If implemented properly, the processes will encourage commitment to the scorecard among all executives and employees that is sometimes not found in the other approaches mentioned. The four-step process overcomes the lack of the stakeholders' involvement and a lack of consensus about the role for the Balanced Scorecard. The processes are (1) defining the appropriate organizational unit; (2) developing around strategic objectives, as well as cause-and-effect relationships and linkages within and across all the four scorecard perspectives; (3) selecting potential measures; and (4) building the implementation plan.

However, due to the lack of time and resources, the author did not carry out the last implementation step suggested by Kaplan and Norton. It was also not possible to develop ideas with regard to implementation strategy at this point because the company expressed reservations at carrying out another management initiative when they were still in the midst of introducing the KPI approach in its performance measurement. The last implementation step includes how the strategic measures are to be linked to database and information systems, and more importantly, how the Balanced Scorecard is integrated into the organization's management system and communicated throughout organization to all levels of employees. This would have

also required having access to commercially sensitive information from the company's information system.

The last step can create a significant difference in achieving the desired results of BSC, as without it, there will be a lack of feedback on how the strategy is being implemented and whether it is working. The last step enables senior and middle executives and all other employees to determine the root causes for exceeding or falling short on any particular measure. It also enables employees in various parts of the organization to understand how the pieces fit together, and how their role influences that of others. The steps carried out in this study are given below:

1. defining the appropriate organizational unit
2. developing strategic objectives, potential measures, and cause-and-effect relationships and linkages within and across all the four scorecard perspectives
3. clarifying and sharing the final ideas for validating with up to 3 meetings with top and key members of Asset Maintenance and Security, and Human Resources Development Divisions.

The explanation of selecting the appropriate organizational unit, developing strategic objectives and potential measures, and clarifying and sharing the final ideas for validating the study in more detailed is given in the following sections.

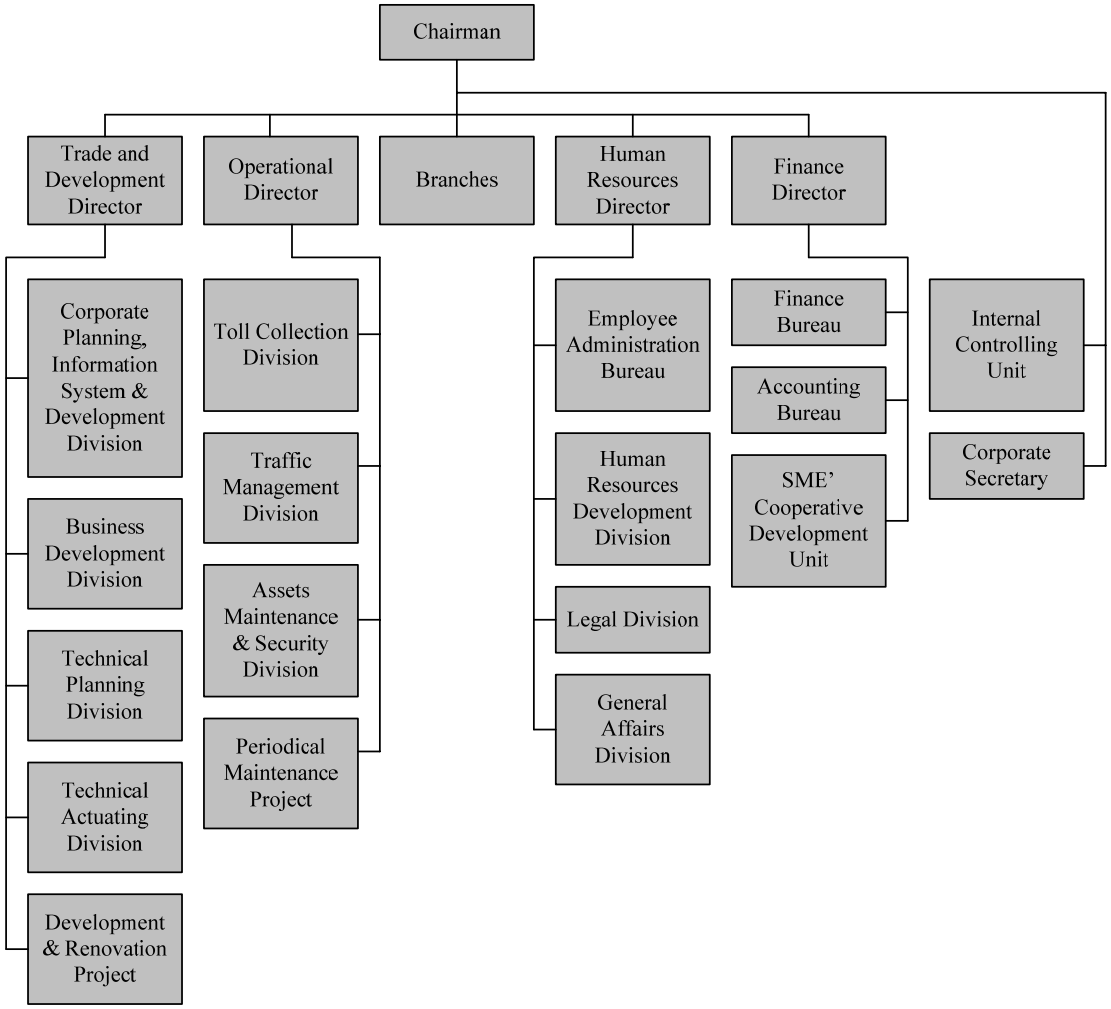
3.4.1 Defining the Appropriate Organizational Unit for Study

The author defined and selected the strategic business unit for which a corporate scorecard is appropriate. When a balanced scorecard will be initially introduced by a company, it is more manageable to implement the scorecard on the business unit level than the corporate level since constructing scorecard for a whole corporation may be a

difficult first task. The first scorecard process will succeed in a strategic business unit, which performs activities across an entire value chain and has a well-defined strategy. The selected business unit should also be relatively easy to construct summary financial measures, without the complications related to cost allocation from or to other organizational units. The Balanced Scorecard that has been adopted for a strategic business unit could become basis for a corporation scorecard.

Once a business unit has been defined and selected, interactions of one business unit to other strategic business units, division and corporate were considered by the author in order to avoid optimizing the results of one business unit at the expense of others or the entire corporation. In this study, the author selected Human Resources Development, as well as Asset Maintenance and Security Divisions as the appropriate organizational unit for which a corporate scorecard is appropriate. These divisions have mission, strategy, customers, internal processes, and employees training that enable them to accomplish their objectives. The divisions carry out activities across an entire value chain i.e. innovation, operations and service.

The Asset Maintenance and Security Division is hereby authorized to coordinate compilation program and to manage the quality of infrastructure operations, as well as road and bridge maintenance work in order to make sure that the entire toll road are running as well as it suppose to be. In addition, Human Resources Development Division was formed to help the company improve and enrich its human resources through training and development programs and services for employees. The organization structure of Jasa Marga is depicted in Figure 3.1.



Source: Jasa Marga, 2003

Figure 3-1 Organizational Structure of Jasa Marga

The Balanced Scorecard study commenced with an invitation letter sent to Jasa Marga. The letter explained to the company the process of participation in this study and the value of being able, which balanced scorecard approach will bring in additional perspectives for performance management relating to the financial and organizational development aspects, beyond the engineering aspects existing in traditional Pavement Management System. The letter also described that the authors would like to share several ideas of the study with the management of Jasa Marga, conduct interviews, and obtained feedback which will assist the authors to improve the ideas proposed.

The company supported the idea of having a scorecard that the company's vision and strategy can be translated into strategic objectives and measures. The company endorsed the study with Human Resources Development, and Asset Maintenance and Security Divisions, and granted the author permission to interview key members of these divisions.

3.4.2 Developing Strategic Objectives and Potential Measures

The author prepared the ideas of the Balanced Scorecard, and in the first meeting with staff member of Jasa Marga, gathered the key internal documents. The documents included the company's vision, mission, performance measurement, strategic plan, reports of reviews of processes, and existing financial and technical operation reports. The author also obtained information on the company's competitive business environment. After the first round of meeting has been carried out, the author attempted to translate company's vision and mission into a tentative list of strategic objectives and potential measures, and then developed several ideas with regard to how a Balanced Scorecard approach can be introduced into the technical/engineering processes of a toll road operator such as Jasa Marga.

Furthermore, the author identified strategic objectives for each perspective and potential measures for each objective. The author also determined whether the business unit's strategy could be represented by the tentative list of strategic objectives. Finally, the author developed cause-and-effect relationships and linkages within and across all the four scorecard perspectives.

In the second meeting, the author conducted interviews with top key members of Asset Maintenance and Security, as well as Human Resources Development Divisions to

obtain their opinions on the company's strategic objectives and potential measures across the four perspectives of Balanced Scorecard. The objectives of this process are to introduce the concept of the Balanced Scorecard to them, to acquire their opinions about the company's strategy, to find out their personal opinions about the value and strategic importance of the balanced scorecard, and to obtain feedback and respond their view about the ideas proposed. Finally, this step will assist the author refine the ideas. The cause-and-effect relationships and the linkages among the strategic objectives and measures within and across all the four scorecard perspectives were also highlighted and discussed.

Questionnaires were given to all participants during the interviews. The questionnaires were created based on the literature review and the Balanced Scorecard study conducted by Chia and Hum (1999). They contain factual questions about relevant and important factors of the study. The design of the questionnaires was carefully organized and only structured questions were included in the questionnaires. The results and discussion of questionnaires survey were conducted to ensure that the adoption of the Balanced Scorecard approach could be analyzed empirically. To use a language that is understood by the respondents, the questionnaires were translated into Indonesia language.

The author summarized and clarified additional information and feedback from the management of Jasa Marga, and finally developed the revised scorecard with regard to how a BSC may be introduced into the engineering processes of toll road operator combining opinions from both ideas developed by the author and feedback from the top key members of the two divisions.

3.4.3 Clarifying and Sharing the Final Ideas

By the end of the meeting, the author met with top key members of Asset Maintenance and Security, and Human Resources Development Divisions to clarify data, information, and feedback of the study for validating, to share the final ideas, and finally, to reach a final consensus on the revised ideas with regard to how a BSC may be implemented into the engineering processes of toll road operator.

Furthermore, the author recommended Jasa Marga to conduct the implementation plan step as the final process in this study. This last step includes how the strategic measures are to be linked to data base and information systems, and more importantly, how the Balanced Scorecard is integrated into the company's existing performance measurement and communicated throughout company to employees. The recommendation of implementation plan for Jasa Marga ended the process of the study. This research methodology simplified the rather long approach used by Kaplan and Norton. The overview of research methodology is presented in Figure 3.2.

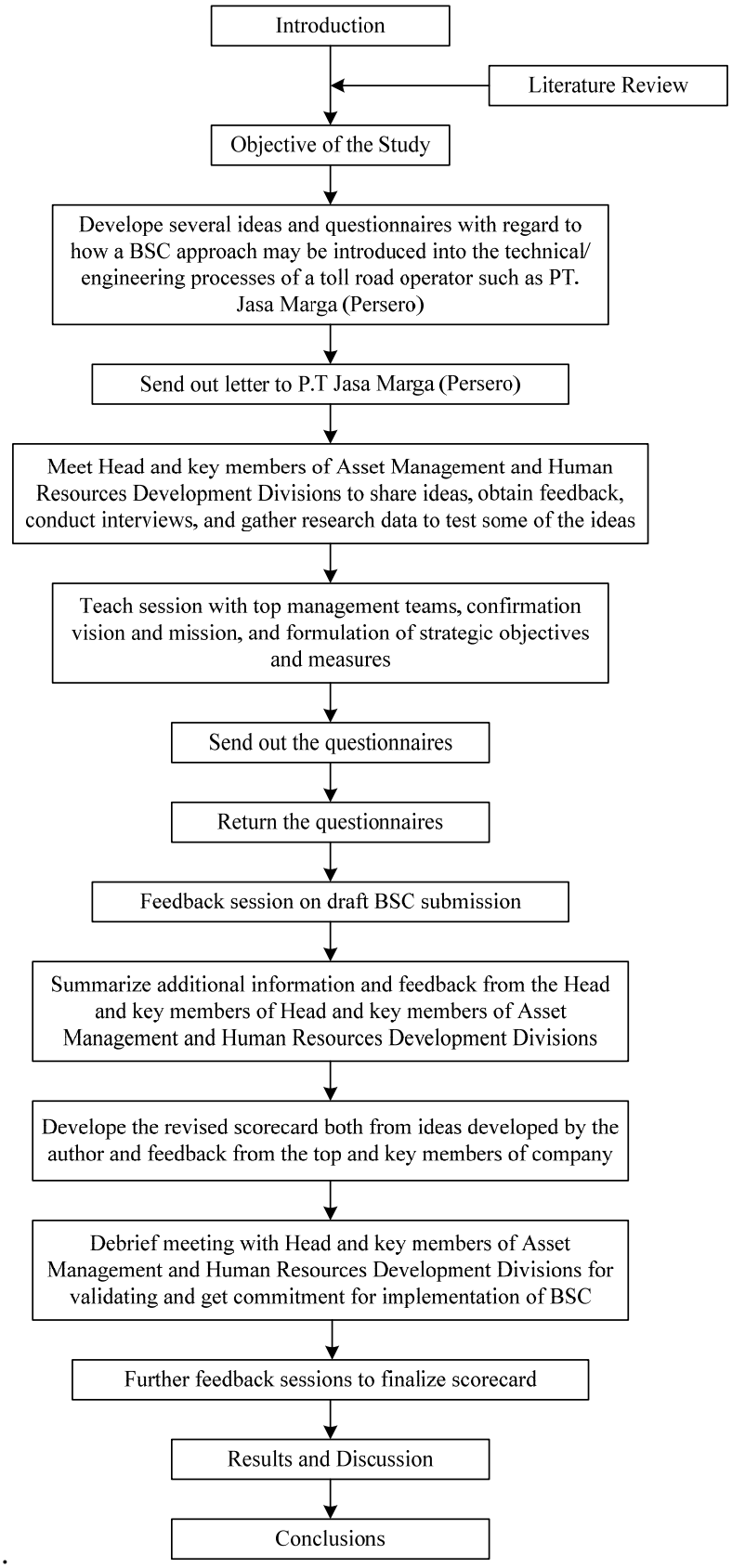


Figure 3-2 Research Methodology

3.5 The Balanced Scorecard in Jasa Marga

The Balanced Scorecard that is adopted in this study focuses on strategic performance measurement framework in a semi-private highway organization. This study attempts to investigate the applicability of ideas for performance measurement in the context of a semi-autonomous government linked company involved in the operation of a toll road network, using data and information reported by Jasa Marga. The cause-and-effect relationships and linkages among the strategic objectives and performance measures within and across all the four scorecard perspectives will be presented to ensure the effectiveness of the implementation of Balanced Scorecard approach in this company.

In this study, the author first developed ideas for a strategic performance measurement framework in a semi-private highway organization based on the Balanced Scorecard approach through the literature search of the relevant subject. Then, this was presented to the key members of the divisions. Several intensive whole day meetings with key members of the divisions were conducted. Through those meetings, the opinions and several additions to the model were recommended and the cause and effect relationships were verified that are indicated in highlighted boxes in Figure 3.3 below.

3.5.1 Cause and Effect Relationships for all Perspectives

In this study, the cause and effect relationships in the financial perspective focus on the objective of increasing shareholder value. The drivers of this objective are to increase budget performance and the company's asset value. Consequently, in order to enhance the budget performance and asset value, a toll road operator should also improve operating performance, maximize utilization of existing assets and benefit/cost

savings, and for a toll road operator in Indonesia, seek to obtain the concessionary licenses from the Toll Road Regulator Board (BPJT) to operate the toll road network.

How does a toll road operator improve financial performance? A toll road operator should meet government requirements and increase toll road user satisfaction. Consequently, government requirements and toll road user satisfaction could be included on the scorecard (in the top customer perspective) because they are expected to have a strong effect on the financial perspective. The process continues by asking how a toll road operator could achieve government requirements and toll road user satisfaction. The realization of reasonable and predictable travel times, toll road safety and security, reasonable toll rates, high ride quality for toll roads, transparency and public involvement, and customer's experience at service points is highly valued by government and toll road user.

The cause and effect relationships continue by asking what internal processes must the organization excel at to achieve higher government and toll road user satisfaction. A toll road operator might need to improve road safety and security, as well as reduce travel times to achieve this. Therefore, the improvement of road safety and security as well as travel times could be included in the top internal perspective. These strategic objectives are expected to have a strong influence on the customer perspective, which, in turn, are expected to lead to higher financial performance.

The process continues by asking how a toll road operator can improve road safety and security as well as travel times. A toll road operator could outsource highway maintenance activities to other firms, increase ride quality, and enhance pavement condition. The drivers of these objectives are to increase toll road capacity, improve internal engineering management and technical processes, and more importantly, make

journeys more reliable, convenient, and faster. The scorecard's internal measures are developed in this study having the greatest influence on government requirements and toll road user satisfaction. Furthermore, how does a toll road operator improve the quality of its internal perspective? Implementing innovative solutions and best practice, increasing employee productivity, and developing a positive working environment are believed to have a strong influence on this internal perspective. Consequently, these objectives could be included in the top learning and growth perspective.

Now, we could focus on the learning and growth perceptive by asking how a toll road operator can improve this perspective. Increasing technical and employee capability, as well as enhancing employee satisfaction could be candidates for this perspective. The drivers of increasing employee capability are to develop strategic employee competencies, communicate legislation about toll roads, and more importantly, implement Good Corporate Governance (GCG), realize leadership development programs, and institute cross-training for employees. The drivers of increasing employee satisfaction focus on the objective of improving working relationships and team performance, increasing employee empowerment and motivation, as well as aligning employee and company goals. The implementation of the Good Corporate Governance (GCG) is included to enable a toll road operator develop a positive working environment, meet the government requirements, and increase budget performance. The entire chain of cause and effect relationships is shown in Figure 3.3 as a vertical vector through the four perspectives. The following sections will discuss several strategic objectives and potential measures for different perspectives. They also provide the background behind the development of cause and effect relationships for each perspective.

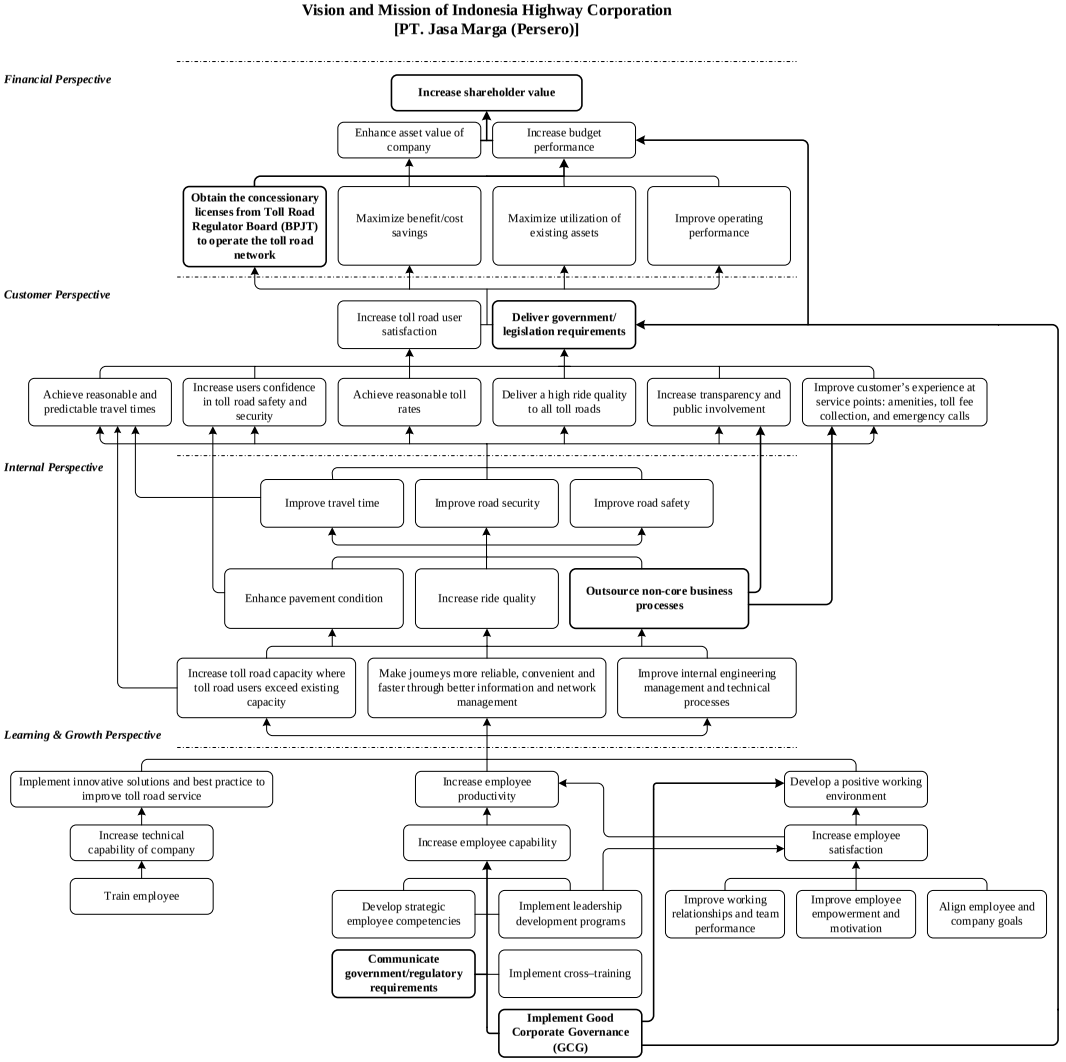


Figure 3-3 Cause and effect relationships for all perspectives

3.5.2 Financial Perspective

As a state-owned company required making profits, financial perspective is important to Jasa Marga. Additional perspectives for financial performance management beyond the engineering and organizational development aspects have to be brought in by the Balanced Scorecard. This perspective is necessary as the company will go public in the first quarter of 2007. Jasa Marga plans to offer about 30 percent of its stake in the initial offering. It needs additional funds to build more toll roads as part of the government's efforts to develop the Indonesia's infrastructure. The proceeds from this Initial Public Offering (IPO) will be used by the company to fund the construction of three toll roads between Semarang and Solo in Central Java, Gempol and Pasuruan in East Java, and the Bogor Ring Road in West Java. The fund will also be used to finance several toll road projects, particularly those in which there has been little investor interest. As a state-owned toll road operator, Jasa Marga has moral responsibility to achieve the government's objective of developing 1000 kilometers of toll roads network (BKBM, 2006).

In this study, the financial objectives serve as the focus for the objectives and measures in all the other scorecard perspectives. The linkage to financial objectives recognizes that the long-term objective for the business is to generate financial returns to investors. The financial perspective focuses on the objective of increasing shareholder value. The driver of the objective of increasing shareholder value is to improve budget performance and to enhance the company’s asset value. Budget performance could be monitored by measuring the percentage of budget allocation compared to budget requirement. The budget should incorporate routine maintenance, periodic maintenance, emergency maintenance, traffic signal maintenance, street lighting

maintenance, painting rustable material (steel), drainage cleaning, repairing and maintenance, coast protection, flood prevention, traffic line markings, mowing grass, and tree trimming cost. To measure the company's asset value, using data and information reported by Jasa Marga, a toll road operator could decide to keep a record of the percentage of land asset certificated and the percentage of organization's asset under insurance as performance measures.

The cause and effect relationships for this perspective continue by asking what financial processes must the organization excel at to improve budget performance and to enhance the company's asset value. A toll road operator should maximize benefit/cost savings and utilization of existing assets, improve operating performance, and more importantly, obtain the concessionary licenses to operate the toll road network. As discussed in Chapter 2, currently, Jasa Marga's only role is that of a toll road operator. Consequently, in order to increase budget performance, Jasa Marga will experience an increasingly competitive business climate with the entry of other investors seeking to obtain concessionary licenses from the Toll Road Regulator Board (BPJT) to operate the toll road network. The percentage of the total length of existing toll roads operated by Jasa Marga compared to private sector could also be used by the company to measure the objective of increasing budget performance.

In terms of the objective of maximizing benefit/cost savings, traditional performance measure (revenue growth) still has an important role for this objective. Another measure that could be used by a toll road operator is the money spent ($) for traffic line marking, coast protection, flood prevention, mowing grass, and tree trimming per kilometer of toll road network. Average expenditure to fabricate and install a traffic sign could also be used by the company to measure this objective.

To measure the company's operational performance, the money spent ($) for routine/recurrent maintenance, preventive/periodic maintenance, emergency maintenance, traffic signal maintenance, street lighting maintenance, painting rustable materials (steel), and drainage cleaning, repairing and maintenance per kilometer of toll road network could be used by the company. Subsequently, to measure the utilization of existing assets, for example, the percentage of asset value replaced each year compared to the total asset value could be used by a toll road operator. These drivers are appropriate to be included in the financial perspective and expected to have a strong to influence shareholders value in the top financial perspective. The cause and effect relationships for financial perspective are shown in Figure 3.4.

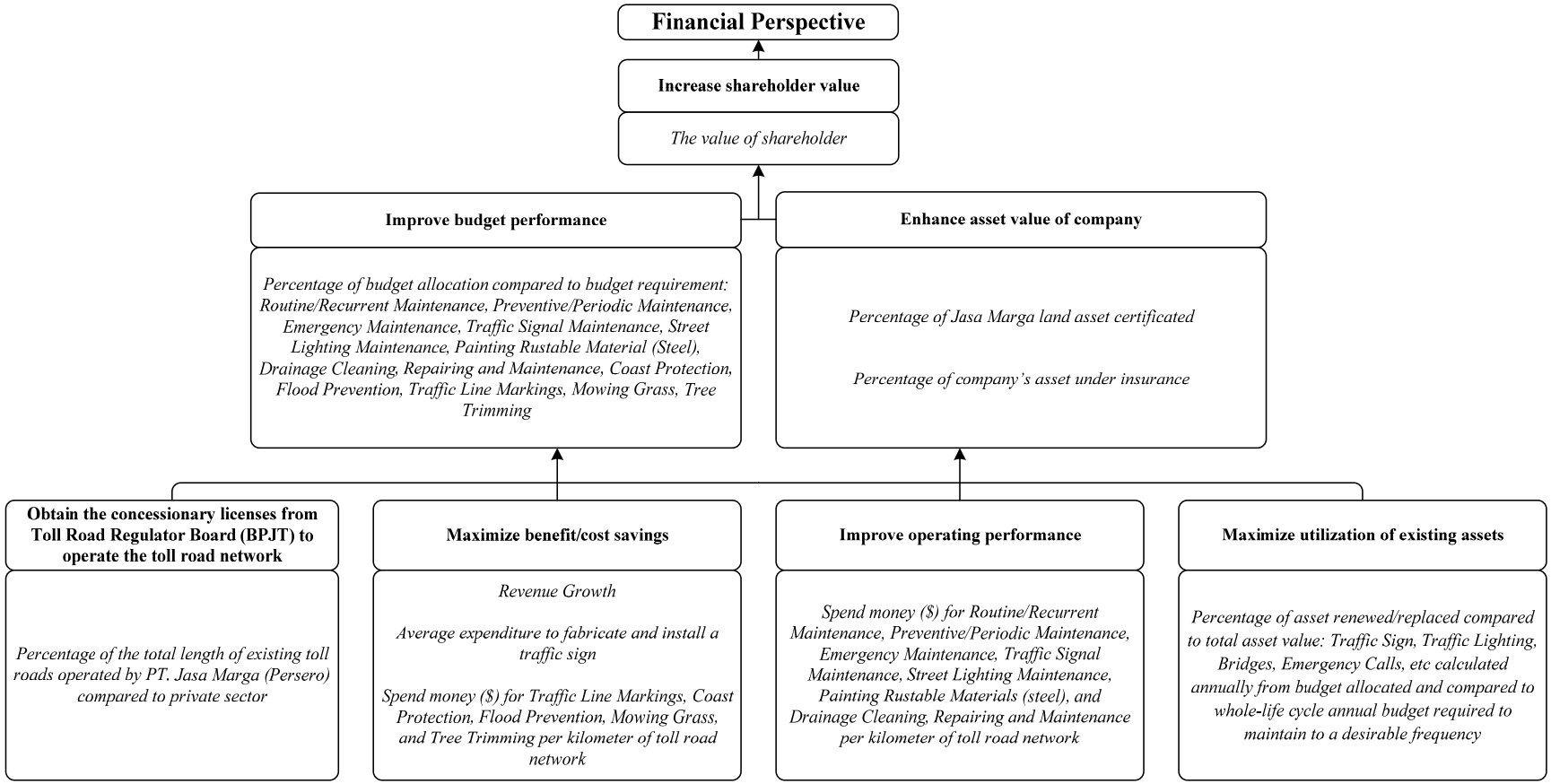


Figure 3-4 Cause and effect relationships for financial perspective

3.5.3 Customer Perspective

In this Balanced Scorecard study, the customer perspective represents the views of government and toll road users. This perspective is adopted to measure how government and toll road users assess toll road service provided by a toll road operator. Consequently, the objectives in this perspective focus on government regulation and toll road users. Performance measures would be selected to meet government requirements and toll road user satisfaction reflecting their perception. The measures for government perspective will include several standard measures such as the percentage of toll road works/contracts completed within target timescales and number of contractors' non-conformances with the contracts for the following: time related; safety related; and specification. While, the percentage of toll road user satisfied with service provided could be used by the organization to measure user satisfaction, toll road users could be asked to comment on issues such as congestion, lighting service, maintenance service, traffic service, safety, security, hygiene, comfort, travel time, toll tariff, pollution and travel information. Toll road user satisfaction could be measured by the organization through annual customer satisfaction surveys with information obtained via a random digit dialing (RDD)-based telephone survey with a personal interview.

Customer satisfaction surveys are often regarded as the most accurate measurement to predict the success of a company. Because they directly ask about the critical success factors of a business, if carried out successfully, these surveys can deliver incisive information and provide ways to gain a competitive edge. Customer satisfaction surveys by telephone are an efficient and effective method to gather data. Prior to beginning the telephone interviews, the interviewer should ask customers whether they

have experience to use toll roads, and then tell them about survey, why the survey is being conducted, and ask for their cooperation. The toll road users' responses are conceived to help the company find out what it is doing well and where it needs to improve.

The process continues by asking how a toll road operator achieves the government and toll road user expectation. The customer perspective should also include performance measures that describe how government and toll road users perceive the toll road operator's activities in achieving reasonable and predictable travel times, increasing transparency and public involvement, achieving reasonable toll tariff, delivering a high ride quality to toll roads, increasing user confidence in toll road safety and security as well as improving customer experience at service points.

To measure transparency and public involvement, for example, the percentage of works orders/contracts that is carried out through competitive bidding procedures could be used by a toll road operator; however, this measure is only one part of a whole. Other performance measures that could also be used by the company are number of financial and technical operation reports to toll road user per year, as well as number of toll road user complaints and suggestions/ideas for improving the company's performance. The latter measure captures the ongoing participation of toll road users in improving the organization's performance. Such a measure can be reinforced by a complementary measure, number of toll road user suggestions/ideas for improving toll road operator's performance implemented. This measure assesses the quality of the suggestions/ideas being able and also communicates to the toll road users that their suggestions/ideas are valued and taken seriously.

The percentage of toll tariff that does not exceed the vehicle operational cost saving when using the toll roads instead of using ordinary road could be used by a toll road operator to monitor reasonable toll tariff. However, the tariff persistently considers the feasibility of investment and the affordability of toll road user. The percentage of service points (amenities, toll fee collection, and emergency calls) in good condition is also an important performance measure to the organization in order to measure toll road user satisfaction.

The ideas of scorecard's customer measures are developed in this study having the greatest influence on government requirements and toll road user satisfaction. The performance measures are considered to assist the organization identify toll road user needs as well as inform a toll road operator what standards should be achieved in delivering the better organization's services. The cause and effect relationships of strategic objectives and performance measures for customer perspective are shown in Figure 3.5.

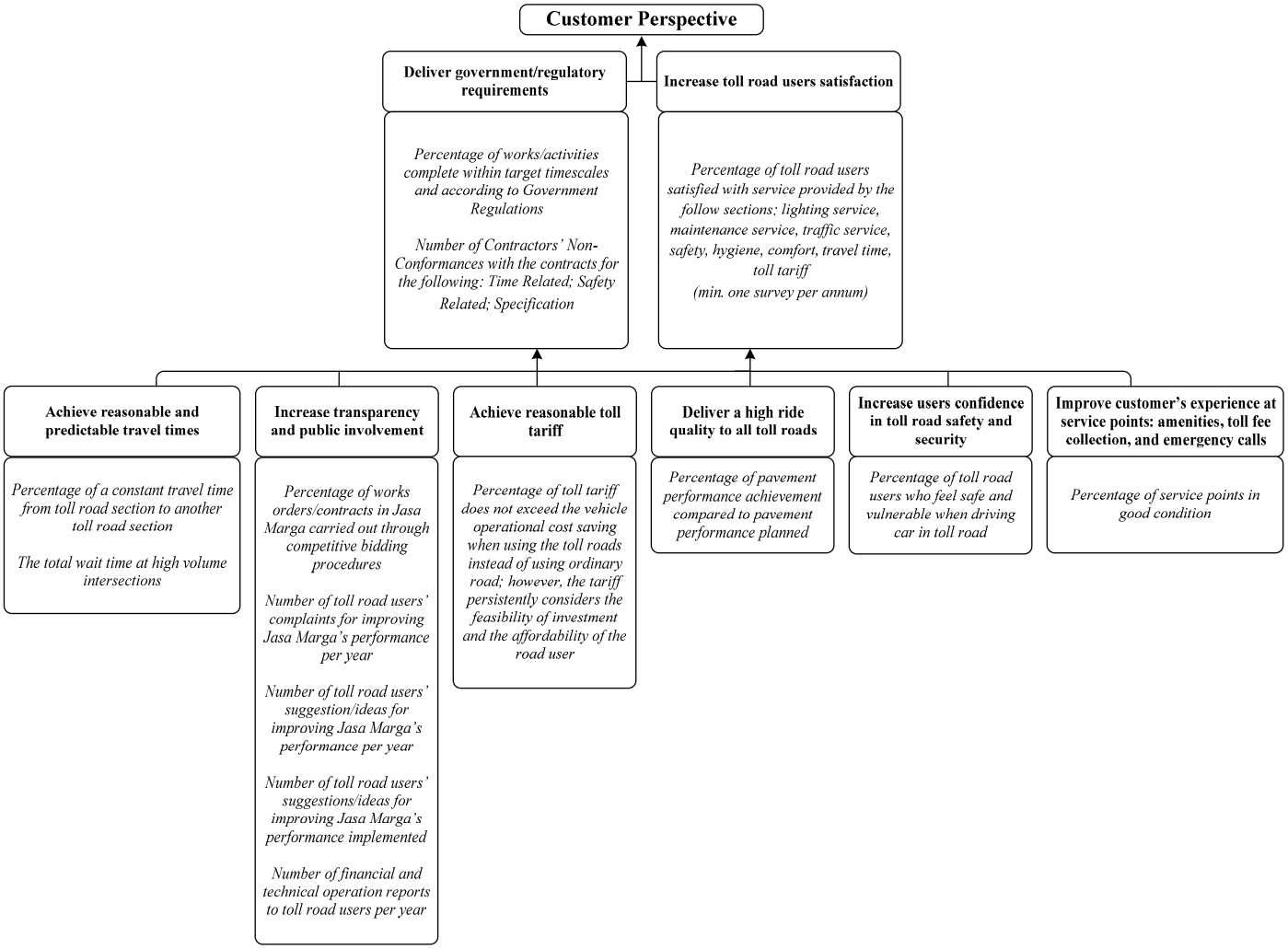


Figure 3-5 Cause and effect relationships for customer perspective

3.5.4 Internal Perspective

This internal perspective identifies the processes that are most critical for achieving customer and financial objectives. The scorecard's internal measures are developed from the internal business processes having the greatest influence on shareholder and customer satisfaction. This perspective also develops several ideas with regard to how a Balanced Scorecard could be introduced into the engineering process of a toll road. The main objectives for internal perspective are to improve security, travel time, and toll road safety for toll road user through increasing ride quality, enhancing pavement condition, and outsourcing non-core business process. The latter could be the outsourcing of highway maintenance activities to other firms. The process continues by asking how a toll road operator could achieve these second level objectives. The drivers of the second level objective could be achieved by increasing toll road capacity, better information and network management, and improving internal engineering management and technical processes.

Road safety has become a major concern for a toll road operator. Robinson et al. (1998) stated that accidents have proved to be an inevitable result of road transport. Fatality rate and number of death caused by accidents are very tangible impacts of roads on the community. Education, enforcement, and engineering are the factors contributing to road safety. In this context, road maintenance activities provide an opportunity for making improvements to road safety by contributing to the engineering factors in the area of pavement and footway surfaces; carriageway markings and delineation; as well as signs, street lights and road furniture. Safety concerns should influence the determination of need and the approach to maintenance in all of that area. Traditional lagging performance measures (e.g., accident, number of death and serious

injuries statistics) have an important role in assessing the objective of improving road safety; however, these measures are just one part of a whole. Other measures that could be used by a highway organization to monitor road safety are fatality rate in road traffic accidents and number of animals killed on the toll road.

Road security is also a key concern for a toll road operator. Potential victims of criminals are probably most vulnerable when stopping their vehicles and truck on the shoulder of toll road for taking a rest. The toll road user should carefully observe surroundings for possible surveillance upon stopping not at rest area locations. Consequently, it is important for a toll road operator to be made aware of these issues. The toll road operator should work in collaboration with other government departments and stakeholders to introduce a number of initiatives to further improve road security. To monitor road security, a toll road operator should introduce a number of comprehensive performance measures. The percentage of toll road area enclosed with fence in good condition, number of criminal occurrences in toll road area treating to toll road users, and number of emergency calls along toll toad network in good condition could be used by the organization to measure whether a toll road company has achieved targets for the objective of improving road security.

In terms of travel time, delays caused by traffic volume, ride quality, pavement condition, incidents, accidents and toll road works could lead to frustration for toll road users. This will also lead to higher operating costs for industries and vehicles. A toll road operator should be made aware of this concern. Using performance measure obtained from Jasa Marga, the percentage of number lanes with less than 10 vehicles queuing of the lanes available and the queuing time for transaction service per vehicle could be used by a toll road operator to measure travel time. This transactions service

reflects the speed of service in toll gates. Other examples of performance measures for monitoring travel time in highway context are shown in Figure 3.6.

Outsourcing has contributed significantly to the development of business-related services during the last decade. An organization should outsource to other firms when the market price for an outsourced business process could be lower than the internal marginal cost for the process (Fixler and Siegel, 1999). The outsourcing of highway maintenance activities was not new in the transportation sector. Over the past year, a series of workshops on the outsourcing of highway maintenance has been held by the American Association of State Highway and Transportation Officials (AASHTO). According to the Council of State Governments, 23 states have outsourced some maintenance activities to other firms. The results have been almost universally excellent, with cost savings of 25 to 50 percent, and improved maintenance speed and quality (Moore, 2000). To monitor the success of outsourcing, the percentage of non-core business processes and highway maintenance activities outsourced, as well as the percentage increase of revenue per employee after the outsourcing of non-core business processes to other firms could be used by the organization.

In terms of ride quality and pavement condition, Rouse et al. (1997) discussed that ride quality and pavement condition are the critical success factors to illustrate the quality of management of the highway asset. The combined effects of traffic loading, pavement strength and quality, as well as climate and environment will influence ride quality and cause pavement condition to deteriorate over time, even with adequate maintenance. Resealing, rehabilitation and road maintenance are major activities affecting the ride quality and pavement condition. At the end of the pavement design life cycle, there will be a need for pavement resealing and rehabilitation. These are

normally relatively costly activities. However, the end of design life could be postponed by effective and timely maintenance. If routine and periodic maintenance are not conducted, surface defects will worsen resulting in pavement structure water penetration. Consequently, a higher level of maintenance is needed prematurely. Failure to perform resurfacing maintenance at the appropriate time leads to more cost of overlay strengthening works, which is at least twice as costly as resealing. Then, if this overlay activity is not conducted on time, major deterioration sets in and pavement reconstruction will be required, which is at least three times more expensive than an overlay (Robinson et al., 1998). The percentage of toll road requiring rehabilitation, resealing, and maintenance could be used by a toll road company to measure the objective of enhancing pavement condition.

Roughness, deflection, surface distress, and surface friction are also used to measure the pavement condition. Distress is one of the major considerations in the design of pavements, and its evaluation is an important component of an effective pavement management system. Pavement deflection is used by highway organizations to evaluate a pavement's structural condition non-destructively. This deflection is necessary to both evaluate the structural adequacy of a pavement and have accurate information on pavement surface to select an appropriate rehabilitation strategy. Roughness is a widely used as an indicator of pavement performance to represent the road surface and ride quality. The value of roughness also indicates the degree of irregularity of the road surface that adversely affects safety and vehicle maintenance costs. Surface friction relates to both the comfort and safety of drivers. It has a significant effect and interacts with the roadway, driver, vehicle and weather to cause skid accidents.

Furthermore, the performance measures of ride quality could be monitored by keeping a record of the percentage of pavement condition in good condition, the percentage of street light in good condition, the percentage of street light faults repaired within certain time, the percentage of road infrastructure (guardrail and barrier) in good condition, and number of toll roads that meet level of service standards.

The driver for this perspective also focuses on the objective of improving internal engineering management and technical processes. For a toll road company, the percentage of road network implementing Pavement Management System (PMS) could be used by the company. The Pavement Management System (PMS) has long been considered as a programming tool that collects and monitors information on current pavement, forecast future conditions, and evaluates and prioritizes alternatives reconstruction, rehabilitation, and maintenance strategies to achieve the “steady state” of system preservation at a predetermined level of performance (U.S. Department of Transportation 1999). It combines engineering and mathematical analyses with sound business practice and economic theory.

To increase ride quality, information on the toll road conditions and the increasing of toll road capacity are needed by toll road user. The organization can provide the information to toll road user through traffic signs, radio or website which offers updated information on toll road works and conditions. The percentage of traffic signs in good condition and the percentage of traffic signs faults repaired within certain time could be used by the highway organization to measure this objective. The total length of existing toll roads could be used by the organization to monitor the toll road capacity. An illustration of internal perspective of the performance measurement based balanced scorecard approach in highway context is shown in Figure 3.6.

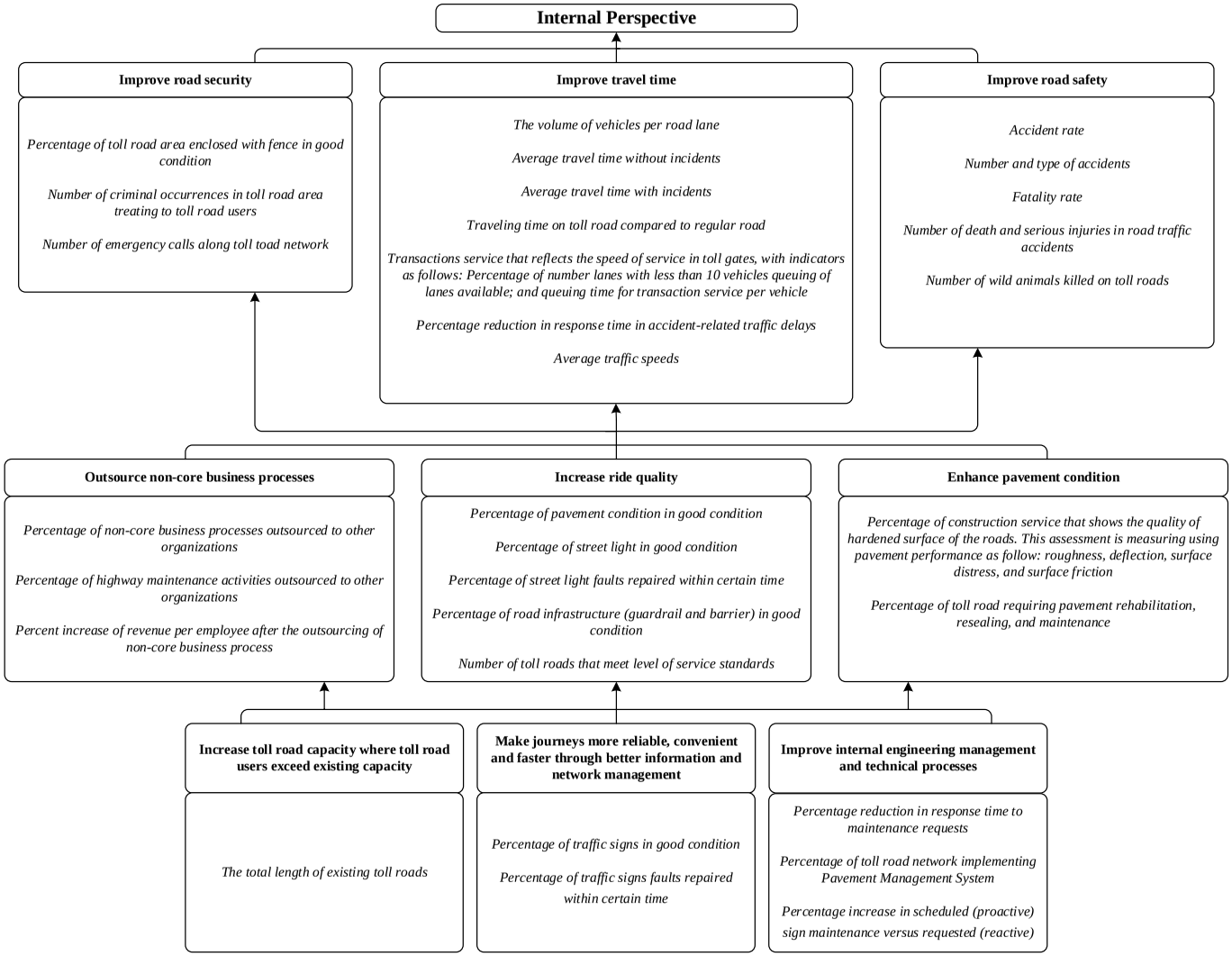


Figure 3-6 Cause and effect relationships for internal perspective

3.5.5 Learning and Growth Perspective

The objectives in this perspective are the drivers for achieving excellent outcomes in the other three perspectives. The enablers for the learning and growth perspective focus on the human resources management, systems and organizational alignment and how the organization can improve and create value. This perspective focus on the main objectives of implementing innovative solutions and best practice to improve toll road service, increasing employee productivity, as well as developing a positive working environment. The following sections provide in more detail an overview of relevant drivers and measures for a toll road company adopted in this perspective.

3.5.5.1 Implementing Innovative Solutions and Best Practice

The first main objective for this perspective is to implement innovative solutions and best practice. The relevant measures that can be used by a toll road company are number of toll road sections/activities registered to International Organization for Standardization: Quality Management System – ISO 9000; Environmental Management System – ISO 14000; Health and Safety Management System – OHSAS 18000, as well as the percentage of employees who understand the concept and practice of Pavement Management System. This first main objective is expected to have a strong influence on the internal perspective. This objective is a result of the aggregate impact of increasing company technical capability and training employee.

In terms of the increasing company technical capability, a toll road company needs the capability to implement and understand the innovative solutions and best practice needed such as pavement management system (PMS). Consequently, a toll road company needs operator who understands the PMS that combines engineering and

mathematical analyses with sound business practice and economic theory. The performance measure for this objective enables the company assesses the technical capability. The percentage of revenues spent on research and development for improving technical capability of company can be used by the company.

To increase the company's technical capability, the company must train its employees. The relevant measures that may be used by the company are number of hours spent by employees on competency/induction training (hours/employee) and the percentage of employees participating in training program related to the planning, construction, operation and maintenance of toll road network such as the PMS training.

3.5.5.2 Increasing Employee Productivity

The second main objective for this perspective is to increase employee productivity. Employee productivity is output measured per employee or per hour. There are many performance measures to monitor the employee productivity. One of the most common measure for employee productivity is revenue per employee. This measure indicates the number of output items that can be generated by each employee.

Jasa Marga uses the traffic volume per employee as performance measure to assess the employee productivity. The ever-increasing measure indicates an increasingly efficient operation for the company in using human resource. However, the increasing of its productivity also indicates the increasing burden of service for each employee from time to time. Jasa Marga implements zero growth and outsourcing policy in order to increase its employee productivity. The outsourcing enables the company generate the same level of output but with fewer internal employees (input). Another measure that may be used by a toll road company is kilometers of pavement rehabilitation, resealing

or maintenance per employee. This performance measure indicates the number of output measured per employee. For a toll road company such as Jasa Marga having branch offices, this measure is useful to compare performance across branch offices.

The relevant drivers in this perspective focus on the objective of increasing employee capability. To increase the employee capability, the organization may need to communicate government regulation to all employees, institute cross-training for employees, implement leadership development program, implement Good Corporate Governance (GCG), and develop strategic employee competencies.

To measure employee capability, the average length of employee's experience in road maintenance activity could be used by the company. The strategic job coverage ratio, the length of time required taking existing employees to the new competency could also be used by the company to measure employee capability. Jasa Marga uses the composition of employee based on education to measure this capability.

To adapt changing environment and meet the competition, Jasa Marga should also increase this capability by communicating legislation about toll roads and its consequences to all employees. The performance measure for this objective that can be used by the company is the percentage of employees who understand the government legislation about toll roads and its consequences. The operation of toll roads in Indonesia is arranged under the following legislations (Jasa Marga, 2005).

1. Law No. 14/1992 about Traffic (*Lalu Lintas*)
2. Law No. 1/1995 about Limited Liability Company (*Perseroan Terbatas*)
3. Law No. 8/1999 about Customer Protection (*Perlindungan Konsumen*)
4. Law No. 19/2003 about Indonesian State Owned Enterprises (*BUMN*)
5. Law No. 38/2004 about Road (*Jalan*)

6. Government Regulation No. 15/2005 about Toll Roads
7. Ministerial Decrees of BUMN No. 100/2002 about on the Assessment of Healthiness Rate of BUMN (*Penilaian Tingkat Kesehatan BUMN*)
8. Ministerial Decrees of BUMN No. 101/2002 about the setting up of the Budget Draft of the Business Plan of BUMN (*Penyusunan Rencana Kerja dan Anggaran Perusahaan (RKAP) BUMN*)
9. Ministerial Decrees of BUMN No. 102/2002 about the setting up Long Term Plan of BUMN (*Penyusunan RJP BUMN*)
10. Ministerial Decrees of BUMN No. 103/2002 about the setting up of the Audit Committee (*Pembentukan Komite Audit*)
11. Ministerial Decrees of BUMN No. 104/2002 about the assessment of the Board of Directors Candidate (*Penilaian Calon Anggota Direksi BUMN*)
12. Ministerial Decrees of BUMN No. 117/2002 about the Implementation of Good Corporate Governance (*Penerapan Praktek GCG*)
13. Ministerial Regulation of Public Works No. 392/2005 about Minimum Service Standards for Toll Road (*Standar Pelayanan Minimum Jalan Tol*).

According to Law No. 38/2004, Jasa Marga will experience an increasingly competitive business climate with the entry of other investors seeking to obtain concessionary licenses from the Toll Road Regulator Board (BPJT) to operate the toll road network. Based on Ministerial Regulation of Public Works No. 392/2005, Jasa Marga must achieve minimum service standard covering toll road condition, average traffic speeds, accessibility, mobility, safety, as well as emergency services, etc.

In terms of leadership development program, Phillips (2005) stated that leadership is perhaps the most difficult measure to tackle. Leadership can make the difference in the success or failure of an organization. Without the appropriate leadership throughout

the organization, resources can be misapplied or wasted, and finally opportunities will be missed. Therefore, this perspective also focuses on the objective of implementing leadership development program. The program is expected to have a strong effect on employee capability. The relevant measures for this objective could be number of employees participating in a leadership development program, number of hours spent by each employee on leadership development program, number and variety of leadership development programs, and the percentage of organization's budget spent on leadership development program.

The objective of instituting cross-training for employees is conceived to build cross-disciplinary relationships and facilitate better communication among employees. It is expected to eliminate duplicate works, and finally, lead to the greater efficiencies to achieve employee productivity. The performance measures that could be used by the organization to assess the implementation of cross-training are the percentage of employees who have been trained within division and with other divisions, as well as number and variety of instituting cross-training.

The driver for this perspective also focuses on the objective of developing strategic employee competency that links the competency with the organization's vision and mission. The employee competency summarizes the strategic skill, knowledge, behaviors, and attitudes needed by employees to carry out a specific process within the organization. The performance measure for this driver could be number of hours of learning new competency per employee, as well as number and variety of developing competency program.

The top key members of Jasa Marga advised the author that this perspective should also focus on the objective of implementing Good Corporate Governance (GCG). The

objective is included the proposed scorecard to enable the company develop a positive working environment, meet government requirements in the customer perspective, as well as increase budget performance in the financial perspective.

The corporate governance is the set of legal, cultural, and institutional arrangements that determine what public corporations can perform, who controls them, and how the risks and return from the activities they undertake are allocated (Blair, 1995). The corporate governance includes the relationship among various stakeholders determining the company's strategy and objectives. The stakeholders could include board of directors, management, shareholders, and employees. The relevant measure that may be used by the company is the assessment level of Good Corporate Governance (GCG) implementation.

3.5.5.3 Developing a Positive Working Environment

This perspective also focuses on the objective of developing a positive working environment. To measure this objective, an organization could decide to keep a record of the number of key staff turnover in whom the company has a long-term interest. Turnover can be defined as the number of employees leaving in a month divided by the average number of employees in the month. The hypothesis motivating this performance measure is that organization sees all of its employees as long-term investments so that key staff turnover with high levels of skill and knowledge represents the loss of intellectual capital of the business (Kaplan and Norton 1996).

Another relevant measure could be the average length of employee service that indicates employee loyalty. The stability and loyalty in a workforce are required by many organizations. Low loyalty represents high turnover. It also indicates instability,

finally could be very disruptive for the organization. Consequently, the challenge for the top and middle managers is to keep the best employees at the target level. The senior executives should consider the employee needs. The employees will contribute their skill and knowledge over a longer period of time if the top key members of the company develop the desire for employees. Such a measure can be reinforced by a complementary measure, the percentage of unplanned absenteeism and the percentage of lost working days (employee absence, tardiness, or partial absences). Absenteeism influences working environment in organization. Employee leaving job and responsibility is able to cause poor operating performance of organization, and finally, to create the ultimate end of organization when absenteeism cannot be controlled (Phillips, 2005).

To develop a positive working environment, an organization should also consider the recognition of excessive overtime. Excessive overtime is able to influence work and personal lives balance in organization. To keep balance for working long hours, the organization should provide compensation to employees who work late hours. This program is believed to improve work and personal lives balance. The amount of excessive overtime connected to the recognition system could be used by the organization as measure for this objective (Phillips, 2005).

This third main objective in this perspective is a result of the aggregate impact of implementing Good Corporate Governance (GCG) as well as increasing employee satisfaction. In terms of the GCG, the previous section has discussed in more detail an overview of implementing GCG. Furthermore, the driver of increasing employee satisfaction focus on the objective of improving working relationships and team performance within organization, enhancing employee empowerment and motivation,

as well as aligning employee and organization objectives. Employee satisfaction is also a precondition for increasing productivity. It is not only a requirement for developing a positive working environment but also for increasing employee productivity in an organization. Kaplan and Norton (1996) stated that employees who scored highest in the satisfaction surveys tend to have the most satisfied customers. Consequently, for a toll road company to achieve a high level of toll road user satisfaction, it may need to have the toll road user served by satisfied employees. Using an annual survey, the company could assess the rate to which employees are satisfied with the company's policy, working environment, training program, recognition, and other factors. Another relevant measure could be the percentage of employees rewarded for their suggestions/ideas. This performance measure could capture the motivated employees who are interested to improve the company's performance.

Many organizations today recognize that meeting ambitious objectives for financial and customer perspectives requires excellent internal processes. However, the objectives for internal perspective cannot be achieved just by individuals working harder, smarter, and more informed, by themselves. The organizations need teams to achieve these ambitious objectives. Therefore, the driver in this perspective focuses on the objective of improving working relationships and team performance. Performance measure can assess the success or failure of working relationships and team performance in a company. Number of projects on which more than one division participated as well as the percentage of business plans developed by teams could be used by the company to measure these relationships. These measures communicate clearly the company goal for employees to work effectively in groups and for groups in different parts of the company to provide mutual help and support.

The skilled employees will not play an important part in the organization's success if they are not motivated to act in the best interest of an organization or if they are not given opportunity to make decisions and take responsibility for their actions, although they are provided with excellent access to information by the organization. Therefore, the relevant driver for increasing employee satisfaction also focuses on the objective of increasing employee empowerment and motivation. The relevant measures for this objective could be number of suggestions/ideas per employee as well as extent of employee proactive involvement in improving road maintenance activities for a toll road company. These performance measures capture the participation of employees in increasing the company's performance. Such measures can be supported by complementary measures, number of employees' suggestions/ideas implemented as well as the percentage of employees' successful suggestions/ideas published to all employees. The performance measures assess the quality of the suggestions/ideas being made and communicate to the employees that their suggestions are valued and taken seriously by the company (Kaplan and Norton, 1996).

Furthermore, the last driver for increasing employee satisfaction focuses on the objective of aligning employee and organization objectives. This performance driver focuses on whether employees have their objectives aligned with the company objectives. The performance measure for this driver is the percentage of top managers and employees exposed to company's objectives. Another measure could be the percentage of top managers and employees with personal goals aligned to company's objectives, as well as the percentage of top managers and employees who achieved personal goals. The cause and effect relationships for learning and growth perspective are shown in Figure 3.7.

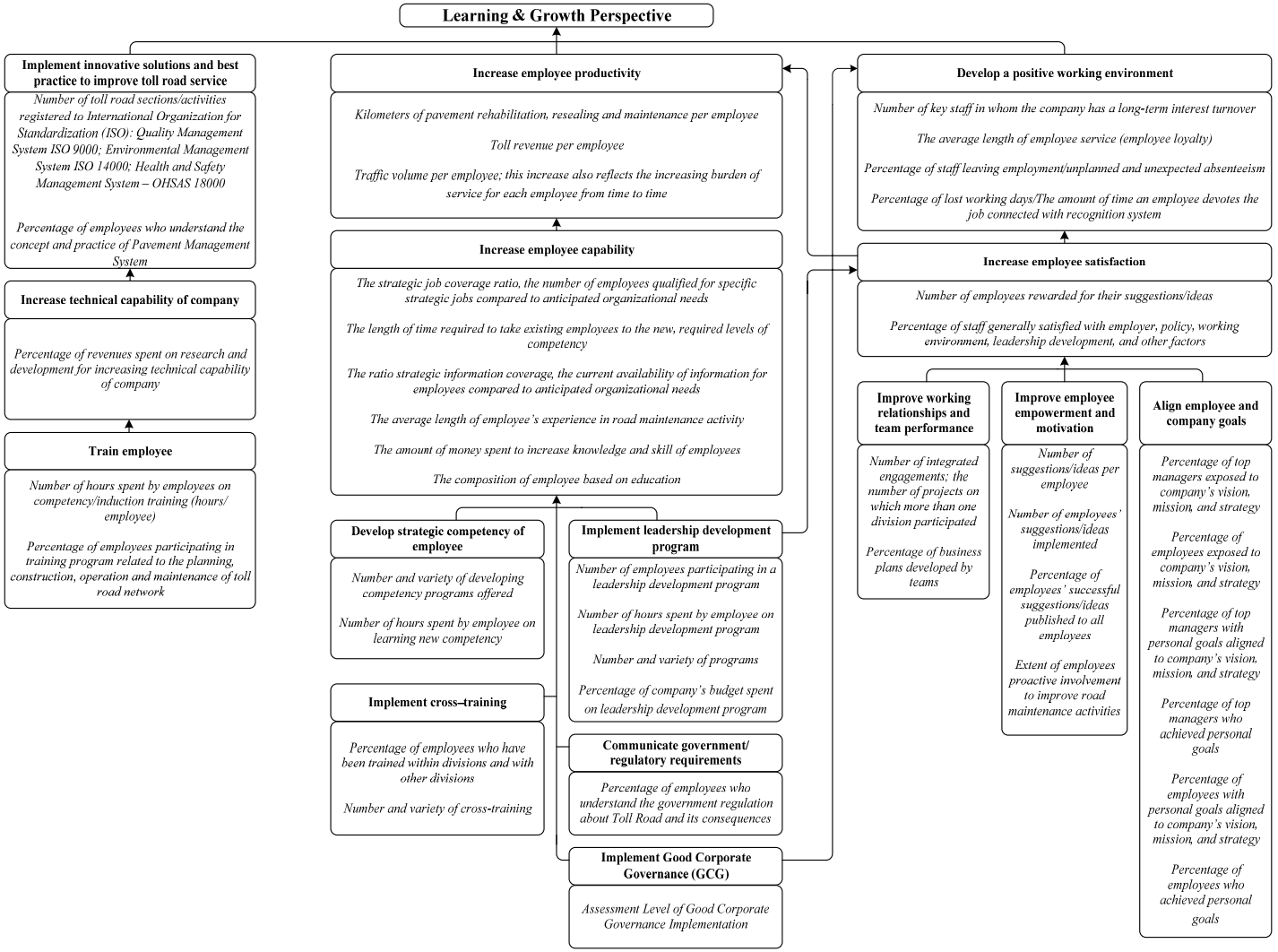


Figure 3-7 Cause and effect relationships for learning and growth perspective

CHAPTER IV

RESULTS AND DISCUSSION

4.1 Overview

Chapter 4 presents the results of the questionnaire survey, as well as a discussion of the feedback received from members of the two divisions of Jasa Marga involved in the study. The implications of the results of this study are also discussed.

As discussed in Chapter 3, Human Resources Development (HRD) as well as Asset Maintenance and Security (AMS) divisions has been selected as the appropriate organizational unit for which a corporate scorecard is appropriate. These divisions have mission, strategy, customers, internal processes, and employees training that enable them to achieve their objectives. The divisions carry out activities across the entire value chain i.e. innovation, operations and service.

The heads, management teams, and staff of AMS as well as HRD divisions expressed satisfaction with the overall process of the Balanced Scorecard study. The process enabled the company communicate its strategies and link its strategic objectives and measures as a set of hypotheses about cause and effect relationships.

This chapter will be presented in five sections. The overview of Chapter 4 is given in Section 4.1. Subsequently, section 4.2 provides the overview of process used to adopt the Balanced Scorecard approach. Section 4.3 presents the results and discussion of the questionnaire survey obtained from members of the two divisions of Jasa Marga in assessing their company's strategies. Section 4.4 presents the results and discussion of

the feedback received from the top key members of the divisions in perceiving the Balanced Scorecard study in their company. Finally, section 4.5 clarifies feedback of the study for reaching a final consensus on the ideas with regard to how a Balance Scorecard could be implemented into the engineering processes of a semi-private highway organization.

4.2 The Balanced Scorecard Process

The information related to the experiences of the top key members of the two divisions throughout the process of the Balanced Scorecard study will be presented. As discussed in Chapter 3, three step processes for this study were carried out in accordance with company regulation to reduce the risk of any unauthorized disclosure of information due to reasons of commercial sensitivity. Interviews with the management of the two divisions have been carried out to acquire their opinion about the company's strategies, to test several ideas with regard to how a Balanced Scorecard approach may be introduced into the technical/engineering processes of their company, and to obtain feedback about the proposed ideas. The processes were conscious design to provide rapid process of the Balanced Scorecard adoption. This is also necessary to maintain the top key members of the two divisions' interest in this study during their busy schedules.

Questionnaires were given to all participants during the interviews. They contain factual questions about relevant and important factors of the study. The results and discussion of questionnaires survey were conducted to ensure that the process of the balanced scorecard study could be analyzed empirically. Using a seven-point scale in the questionnaires, the respondent's opinion is presented in Table 4-1.

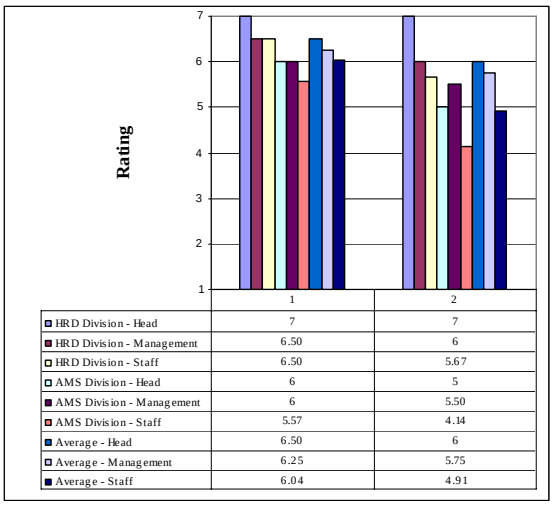
Table 4-1 a seven-point scale of respondent's opinion

Rating	Familiar	Good	Difficulty	Positive	Agree	Problem
1	Not familiar at all	Not well at all	Very difficult	Very negative	Strongly disagree	Not problem at all
2	Not familiar	Not well	Difficult	Negative	Disagree	Not problem
3	Somewhat not familiar	Somewhat not well	Somewhat difficult	Somewhat negative	Somewhat disagree	Somewhat not problem
4	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
5	Somewhat familiar	Somewhat well	Somewhat easy	Somewhat positive	Somewhat agree	Somewhat problem
6	Familiar	Well	Easy	Positive	Agree	Problem
7	Very familiar	Very well	Very easy	Very positive	Strongly agree	Serious problem

4.3 Perception of the existing Performance Measurement System

This section presents the results and discussion of the questionnaire survey obtained from members of the two divisions of Jasa Marga in perceiving their company's strategies. The results and discussion may assist the company in adopting the Balanced Scorecard approach. They are used to assess whether the company's existing performance measurement has characteristics that can be integrated with the Balanced Scorecard approach. The results and discussion to the questions in the questionnaires are presented in the following sections.

4.3.1 Familiarity with the Vision, Mission, and Performance Measurement



	1	2
HRD Division - Head	7	7
HRD Division - Management	6.50	6
HRD Division - Staff	6.50	5.67
AMS Division - Head	6	5
AMS Division - Management	6	5.50
AMS Division - Staff	5.57	4.14
Average - Head	6.50	6
Average - Management	6.25	5.75
Average - Staff	6.04	4.91

Questionnaires:
1. Familiarity with vision and mission
2. Familiarity with performance measurement

Figure 4-1 Familiarity with the vision, mission, and performance measurement system

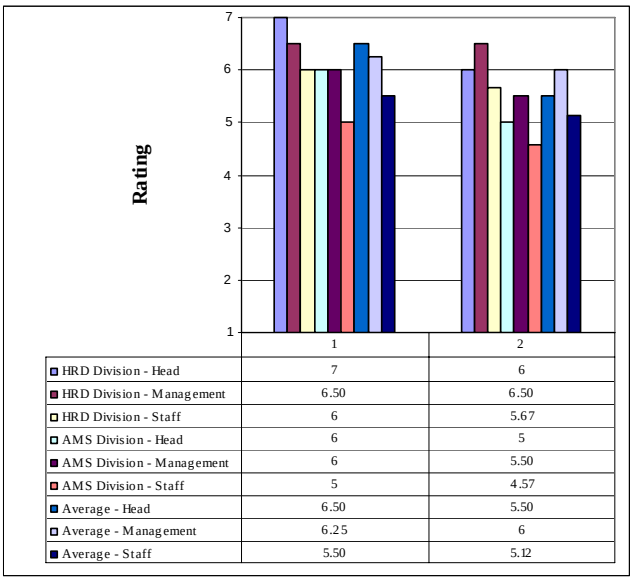
The top key members of the two divisions of Jasa Marga were asked to what extent they are familiar with their company's vision, mission, as well as performance measurement. As shown in Figure 4-1 (the 1st questionnaire), the data on familiarity with the company's vision and mission showed that the heads of the two divisions were very familiar with the company's vision and mission. Similarly, the data from the management teams and staff of the two divisions also indicated that they were familiar with the company's vision and mission. However, concerning vision and mission formulation, our experiences with this company suggested that several middle managers were not involved in the formulation of their company's vision and mission from the start. Therefore, vision and mission awareness and ownership were observed to be absent initially.

Subsequently, the data on familiarity with the company's performance measurement (the 2nd questionnaire) showed that the head and management teams of the two divisions were familiar with the company's performance measurement. Similarly, the data from the staff of the divisions indicated that they were somewhat familiar with the company's performance measurement. As discussed in Chapter 3, Jasa Marga implements the Key Performance Indicators (KPI) approach in its performance measurement.

The results as shown in Figure 4-1 suggested that the company's vision, mission, and performance measurement have been well-communicated to all employees. This implied that there is consensus on strategies within the company. The company has translated its vision and mission into a more precise form that can gain consensus among its senior executives. The results also indicated that there is a dialogue between the company and its senior executives about the formulation and implementation of strategies for breakthrough performance for the future articulated in their performance

measurement. These findings are useful to the company in adopting the Balanced Scorecard approach. A good Balanced Scorecard process starts with the senior executives working together to translate the company's vision and mission into a performance measurement. The first step for the adoption of Balanced Scorecard is to gain consensus and support among senior management on why the scorecard is being developed. Therefore, the implementation of Balanced Scorecard needs consensus and teamwork among all senior executives.

4.3.2 Linkage Strategies



	1	2
HRD Division - Head	7	6
HRD Division - Management	6.50	6.50
HRD Division - Staff	6	5.67
AMS Division - Head	6	5
AMS Division - Management	6	5.50
AMS Division - Staff	5	4.57
Average - Head	6.50	5.50
Average - Management	6.25	6
Average - Staff	5.50	5.12

Questionnaires:
1. Linkage between the vision and mission, and operations
2. Linkage between the strategic objectives and measures

Figure 4-2 Linkage strategies

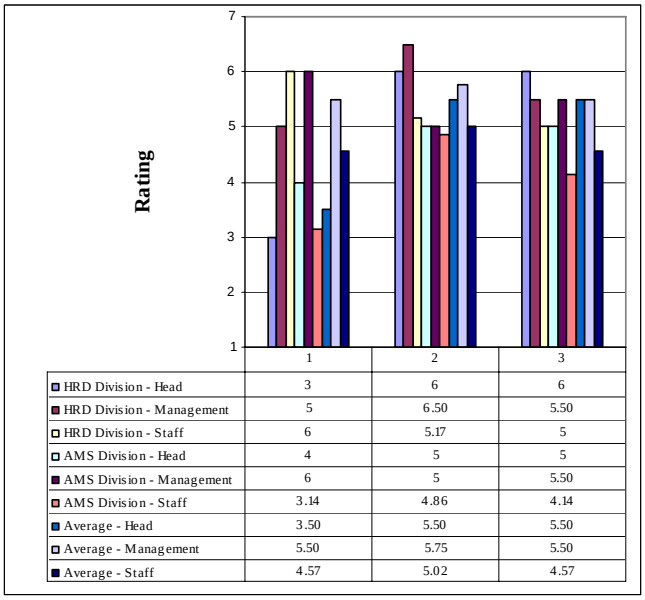
The degree of agreement of the company's vision and mission linked directly to the company's operations, as well as the strategic objectives linked to measures are also asked to top key members of the two divisions. The results in Figure 4-2 (the 1st questionnaire) indicated that heads of divisions were very confident that the company's vision and mission are linked directly to operations. Similarly, the data from management teams and staff of the two divisions indicated that the company's vision and mission are well linked to operations. The findings also showed that the heads of

the two divisions are more confident than their management teams and staff. These results indicated that the company has decomposed the high-level objectives of the corporate level into specific measures at the operational level. Consequently, the adoption of Balanced Scorecard approach was not expected to meet many problems with regard to linking operational process measures with the company's vision and mission.

The degree of agreement of the company's strategic objectives linked directly to measures is also asked to the top key members of the two divisions. The results as shown in Figure 4-2 (the 2nd questionnaire) indicated that heads, management teams, and staff of divisions believed that the company's strategic objectives are well linked directly to the company's performance measures. The results also showed that the management teams were more confident than the heads and staff of divisions.

The Balanced Scorecard approach emphasizes the importance of incorporating measures that are derived from an organization's strategic objectives. Therefore, the experience of the company in linking the strategic objectives into the measures may assist the company in identifying which measures are not working, which measures should be modified, and which potential measures should be incorporated into the scorecard during the adoption of Balanced Scorecard approach. The author also asked the key members of the divisions how they knew that their company objectives have been achieved. They informed that newsletter, routine meetings and reviews, bulletin board, management report were means of knowing that objectives have been achieved.

4.3.3 Communicating and Monitoring



	1	2	3
HRD Division - Head	3	6	6
HRD Division - Management	5	6.50	5.50
HRD Division - Staff	6	5.17	5
AMS Division - Head	4	5	5
AMS Division - Management	6	5	5.50
AMS Division - Staff	3.14	4.86	4.14
Average - Head	3.50	5.50	5.50
Average - Management	5.50	5.75	5.50
Average - Staff	4.57	5.02	4.57

Questionnaires:
1. Frequency: communicating the performance measurement to employees
2. Monitoring the strategic objectives
3. Monitoring the performance targets

Figure 4-3 Communicating and monitoring

This section presents the results and discussion on the frequency of communicating the company's performance measurement to all employees perceived by top key members of the two divisions. The existing performance measurement explaining the company's strategic objectives, measures, and targets is communicated to the company through periodic reports.

The management teams of the two divisions stated that the company's performance measurement was being communicated frequently to their employees. Similarly, the combined results of staff also showed that the company's performance measurement was being communicated somewhat frequently to their employees. However, the heads of the two divisions stated that the company's performance measurement was being communicated somewhat not frequently to their employees. The perception of the heads of the two divisions indicated that the employees may not be familiar about the company's objectives and measures articulated in the performance measurement. The

heads of two divisions stated that the performance measurement will be communicated more frequently not only through periodic reports but also through company newsletters, bulletin boards, and videos. They believed that this communication can provide information to all employees about the strategic objectives that must be achieved. They emphasizes that in future, all employee in their company must understand the company's performance measurement for achieving those objectives.

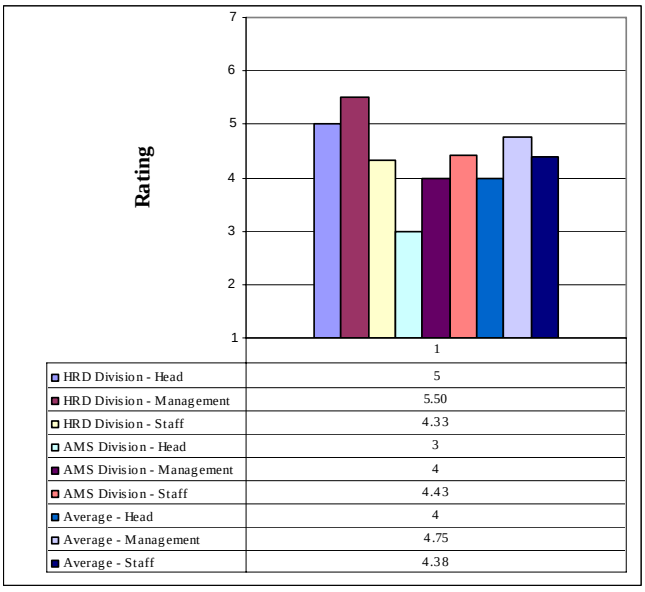
The top key members of the two divisions were also asked about whether their company's strategic objectives were well monitored. As shown in Figure 4-3 (the 2nd questionnaire), the heads and management teams of divisions believed that their company has well monitored the strategic objectives. The findings also suggested that the management teams of divisions are more optimistic than the heads and staff regarding the monitoring of the company's strategic objectives.

To communicate the need for organizational change, the company has also established targets for each performance measures. These performance targets enable the company to measure the long-term outcomes it wishes to achieve, and to provide resources for achieving those outcomes. The top key members of the two divisions were also asked about whether their company's performance targets were well monitored. As shown in Figure 4-3 (the 3rd questionnaire), the heads and management teams of divisions stated that their company has well monitored its performance targets.

The results in Figure 4-3 suggested that the company has a procedure to receive feedback about its strategic objectives and performance targets. The existing performance measurement enables the senior executives to monitor and adjust the implementation of the company's strategic objectives and performance targets. Consequently, the senior executives could consider closely whether the company has

achieved its objectives and targets. This experience will certainly assist the company in adopting the Balanced Scorecard approach. The Balanced Scorecard has its greatest impact when it is deployed to drive organizational change through establishing performance targets for the scorecard measures, which, if achieved, will change the company's performance. The Balanced Scorecard also provides for the next vision and strategy process where the objectives and targets in the scorecard would be reviewed, updated, and replaced periodically in accordance with the most current view of the strategic outcomes and required performance drivers for the upcoming periods.

4.3.4 Difficulty of Developing the Company's Strategies and Objectives



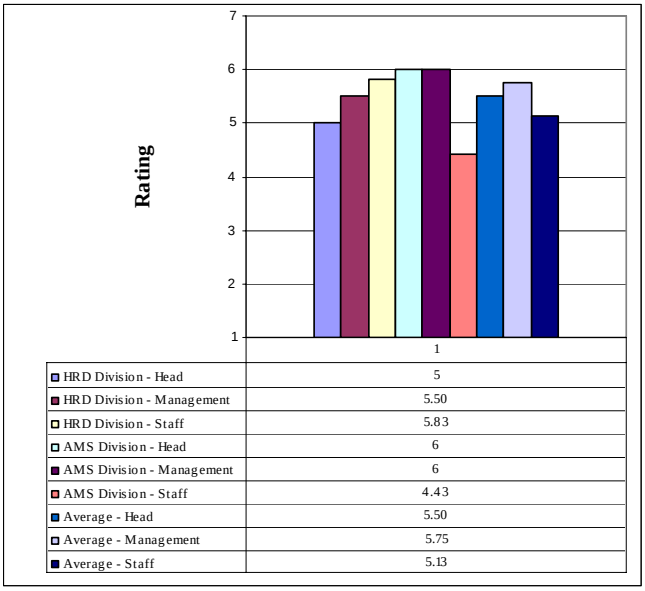
	1
HRD Division - Head	5
HRD Division - Management	5.50
HRD Division - Staff	4.33
AMS Division - Head	3
AMS Division - Management	4
AMS Division - Staff	4.43
Average - Head	4
Average - Management	4.75
Average - Staff	4.38

Figure 4-4 Difficulty of developing the strategies and objectives

The key members of AMS as well as HRD divisions were also asked about how they rate difficulty when the company's strategies and objectives were developed by their company. Figure 4-4 showed that the heads and staff of the divisions indicated a neutral and fairly neutral response. However, the data from the management teams of the divisions indicated that they were somewhat easy. The findings indicated that the

company had no problems in developing their strategies and objectives. The results also showed a positive part in adopting the Balanced Scorecard in Jasa Marga.

4.3.5 Cause and Effect Relationships



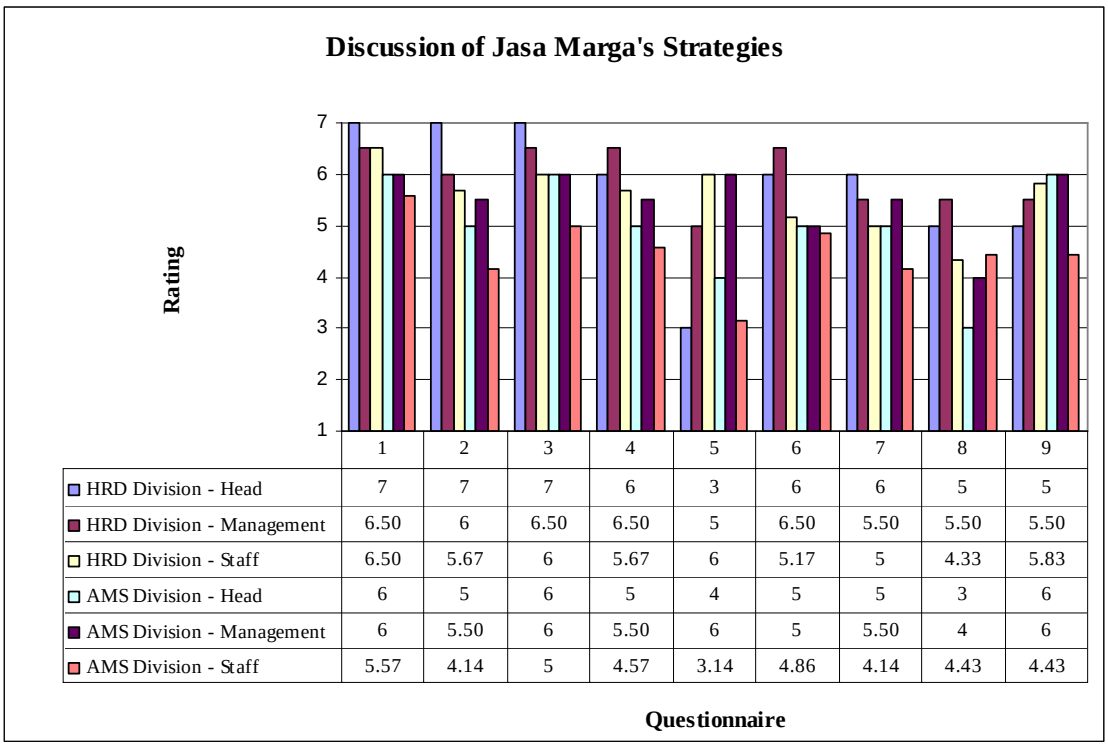
	1
HRD Division - Head	5
HRD Division - Management	5.50
HRD Division - Staff	5.83
AMS Division - Head	6
AMS Division - Management	6
AMS Division - Staff	4.43
Average - Head	5.50
Average - Management	5.75
Average - Staff	5.13

Figure 4-5 Cause and effect relationships between indicators

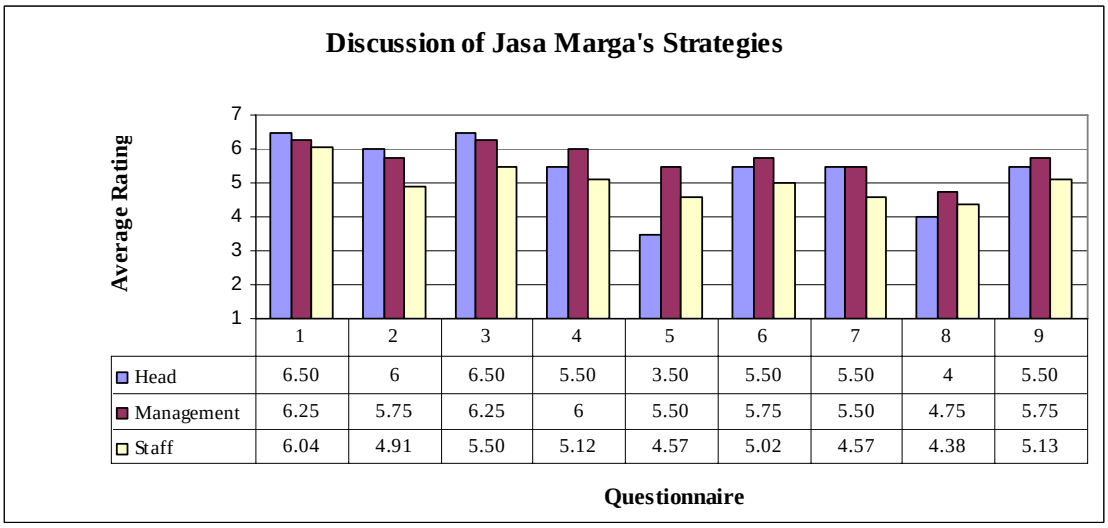
The key members of AMS as well as HRD divisions were asked about whether the relationships and linkages between their company's key performance indicators were well established. Figure 4-5 indicated that the heads and the management teams of the divisions believed that the relationships and linkages between their company's key performances indicators were well defined. The findings also showed that the staff of the divisions do not have a tendency to more optimistic than others. The staff of the two divisions suggested that the relationships and linkages between their company's key performances indicators (KPI) were somewhat well established. However, the cause-and-effect relationships that link elements from one indicator to another as discussed in Chapter 3 are not clearly shown in the KPI. Consequently, the employees may not understand how the pieces fit together, how their role influences others and, eventually, the entire company. To implement the Balanced Scorecard successfully,

every measure selected for a Balanced Scorecard should be part of a link of cause and effect relationships between outcome measures and the performance drivers of those outcomes, which link elements from learning and growth, to internal processes, to customers and, finally, to financial performance that represent the organization's strategy.

The results and discussion of the questionnaire survey above indicated that the existing performance measurement has characteristics that may assist the company in adopting the Balanced Scorecard approach. The existing performance measurement has involved senior executives of the organization in building consensus and clarity about how to translate the company's vision and mission into performance measurement. The findings showed that the existing performance measurement has been communicated throughout company to all employees. The performance targets have been developed for each strategic indicator. These results also indicated that the relationships and linkages between their company's key performance indicators were well established. As discussed in Chapter 3, the company already has performance measurement system that incorporates a mixture of financial and non-financial measures. Subsequently, the all feedback to the questions obtained from members of the two divisions of Jasa Marga in assessing their company's strategies are summarized in Figure 4-6.



	1	2	3	4	5	6	7	8	9
HRD Division - Head	7	7	7	6	3	6	6	5	5
HRD Division - Management	6.50	6	6.50	6.50	5	6.50	5.50	5.50	5.50
HRD Division - Staff	6.50	5.67	6	5.67	6	5.17	5	4.33	5.83
AMS Division - Head	6	5	6	5	4	5	5	3	6
AMS Division - Management	6	5.50	6	5.50	6	5	5.50	4	6
AMS Division - Staff	5.57	4.14	5	4.57	3.14	4.86	4.14	4.43	4.43



	1	2	3	4	5	6	7	8	9
Head	6.50	6	6.50	5.50	3.50	5.50	5.50	4	5.50
Management	6.25	5.75	6.25	6	5.50	5.75	5.50	4.75	5.75
Staff	6.04	4.91	5.50	5.12	4.57	5.02	4.57	4.38	5.13

Figure 4-6 Discussion of Jasa Marga's strategies (combined)

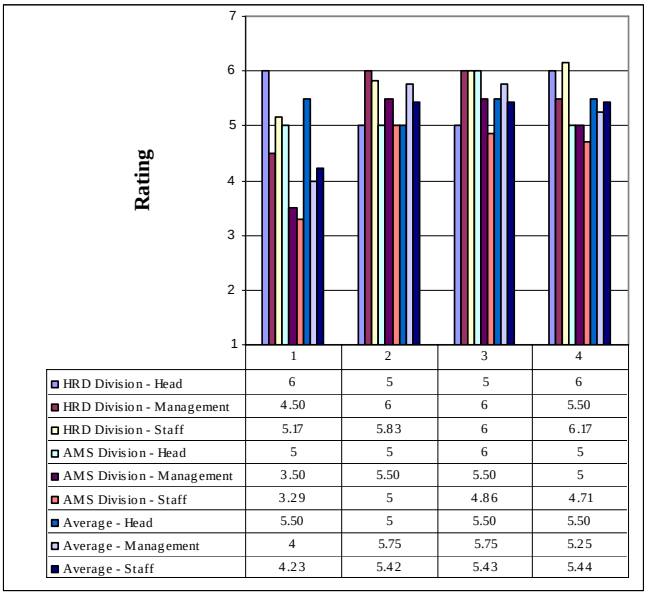
Notes:

1. Familiarity with the company's vision and mission
2. Familiarity with the company's performance measurement
3. Linkage between the vision and mission, and operations
4. Linkage between the strategic objectives and performance measures
5. Frequency: communicating the performance measurement to all employees
6. Monitoring the strategic objectives
7. Monitoring the performance targets
8. The degree of difficulty of developing the company's strategies and objectives
9. Cause and effect relationship between the performance indicators

4.4 Perception of using the Balanced Scorecard in Jasa Marga

Section 4.4 presents the results of the questionnaire survey, as well as a discussion of the feedback received from members of the two divisions of Jasa Marga in perceiving the Balanced Scorecard study in the company. The challenges concerned and difficulties faced affecting the results of this study will be discussed using information gathered from the top key members of the two divisions. The implications of the results of this study are also discussed. The results and discussion to the questions in the questionnaires are presented in the following sections.

4.4.1 Perception of the Balanced Scorecard approach



	1	2	3	4
HRD Division - Head	6	5	5	6
HRD Division - Management	4.50	6	6	5.50
HRD Division - Staff	5.17	5.83	6	6.17
AMS Division - Head	5	5	6	5
AMS Division - Management	3.50	5.50	5.50	5
AMS Division - Staff	3.29	5	4.86	4.71
Average - Head	5.50	5	5.50	5.50
Average - Management	4	5.75	5.75	5.25
Average - Staff	4.23	5.42	5.43	5.44

Questionnaires:
1. Familiarity with the Balanced Scorecard
2. Interested to read further the Balanced Scorecard
3. The degree of agreement of implementing the Balanced Scorecard
4. The involvement of senior executives in implementing Balanced Scorecard

Figure 4-7 Perception of the Balanced Scorecard approach

Questionnaires given to all participants during the interviews were also to obtain the participants' knowledge and understanding about the Balanced Scorecard approach. The data on familiarity with the Balanced Scorecard (see Figure 4-7) showed that the head of AMS as well as HRD divisions were familiar with the Balanced Scorecard.

The heads of the two divisions stated that they have studied previously the Balanced Scorecard approach. They are also interested to adopt the Balanced Scorecard approach in their division.

Similarly, the data from the management teams and staff of HRD division also showed that they were somewhat familiar with the Balanced Scorecard. The top key members of the HRD division also stated that they have studied the Balanced Scorecard approach. It is obvious because this division has responsibility to develop the company's strategies for human resources development in accordance with company needs.

However, the data from the management teams and staff of AMS division indicated that they were somewhat not familiar with the Balanced Scorecard. The results in Figure 4-7 suggested that the Balanced Scorecard might be a relatively new approach for them. Consequently, they need the explanation of the concept and process of Balanced Scorecard. As part of this study, the Balanced Scorecard approach was introduced to the management teams and staff of AMS division.

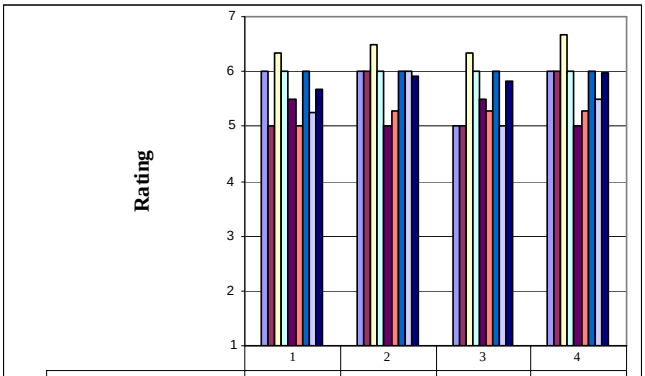
The top key members of the two divisions were also asked about whether they will be interested to read further about the Balanced Scorecard. Figure 4-7 (the 2nd questionnaire) showed that the heads and staff of divisions were somewhat interested to read and understand further about the Balanced Scorecard. The results also indicated that the management teams of divisions are more interested than the heads and staff of the divisions. These results indicated that they were interested to understand further the concept of the Balanced Scorecard. This response will help the company in adopting the Balanced Scorecard approach. For the Balanced Scorecard approach to be implemented successfully, the project requires the top key members of the company

who well-understand relevant background information for constructing the scorecard. Senior executives must be fully engaged in the process. The adoption of Balanced Scorecard approach will surely fail without the knowledge about the scorecard and active participation at the senior executives.

The key members of the two divisions were also asked to what extent they would agree if their company adopts the Balanced Scorecard as a performance measurement. Figure 4-7 (the 3rd questionnaire) indicated that the heads, management teams, and staff of the divisions agree to adopt the Balanced Scorecard approach in their company. They believed that the Balanced Scorecard will assist their company in improving the company's performance. They suggest that the Balanced Scorecard can translate the company's vision and strategy into strategic objectives and measures across a balanced set of perspectives, namely, the financial, customer, internal business process, and learning and growth perspectives.

Then, the key members of AMS as well as HRD divisions were asked to what extent they would agree if all top and middle level managements are involved in Balanced Scorecard adoption. As shown in Figure 4-7 (the 4th questionnaire), the heads, management teams, and staff of the divisions agree if the top key members of the company are involved in adopting the Balanced Scorecard approach. This feedback is very important. The perception will certainly assist the company in assessing and reviewing the proposed Balanced Scorecard if the scorecard needs to be updated, and replaced by the company. Since, to build consensus and clarity about how to translate the company's vision and mission into operational objectives and measures, a good Balanced Scorecard requires all senior executive involvement. Unless these senior executives are fully involved in the process, a successful Balanced Scorecard is unlikely.

4.4.2 Perception of the proposed strategic objectives and measures



	1	2	3	4
HRD Division - Head	6	6	5	6
HRD Division - Management	5	6	5	6
HRD Division - Staff	6.33	6.50	6.33	6.67
AMS Division - Head	6	6	6	6
AMS Division - Management	5.50	5	5.50	5
AMS Division - Staff	5	5.29	5.29	5.29
Average - Head	6	6	6	6
Average - Management	5.25	6	5	5.50
Average - Staff	5.67	5.90	5.81	5.98

Questionnaires:
1. The degree of agreement of the strategic objectives and measures in financial perspective
2. The degree of agreement of the strategic objectives and measures in customer perspective
3. The degree of agreement of the strategic objectives and measures in internal perspective
4. The degree of agreement of the strategic objectives and measures in learning and growth perspective

Figure 4-8 Perception of the proposed strategic objectives and measures

The key members of the two divisions were asked to what extent they would agree with the strategic objectives and measures for financial perspective in this Balanced Scorecard study. As discussed in Chapter 3, this perspective provides measures to indicate whether a company's strategy, implementation, and execution are contributing to bottom-line improvement. The financial objectives relate to profitability, growth and shareholder value. The financial objectives serve as the focus for the objectives and measures in all the other scorecard perspectives.

In this study, the main objective for the financial perspective is to increase shareholder value. The drivers for this perspective focus on the objectives of improving budget performance and enhancing the company's asset value. The cause and effect relationship for this perspective continues by asking what financial processes must the organization excel at to improve budget performance and to enhance the company's

asset value. The company should maximize benefit/cost savings and utilization of existing assets, and improve operating performance.

As shown in Figure 4-8 (the 1st questionnaire), the heads and staff of the divisions agree with the strategic objectives and measures for financial perspective in this study. However, the management teams of divisions somewhat agree with the strategic objectives and measures in this perspective. The findings in Figure 4-8 showed that the ideas of the strategic objectives and measures proposed for financial perspective can be accepted by the company.

The head and management teams of AMS division concerned that Jasa Marga is facing a new regulatory environment and increased competition with the entry of other investors seeking to obtain concessionary licenses from the Toll Road Regulator Board (BPJT). Therefore, they proposed that the model should incorporate the objective of obtaining concessionary licenses from the BPJT to operate the toll road network in the financial perspective that are indicated in highlighted boxes in Figure 3.3.

The key members of AMS as well as HRD divisions were asked to what extent they would agree with the strategic objectives and measures for customer perspective in this Balanced Scorecard study. As discussed in Chapter 3, the customer perspective represents the views of government and toll road users. This perspective is used to measure how government and toll road users in assessing toll road service provided by the company. The objectives in this perspective focus on government regulation and toll road users. The performance measures are selected to meet government requirements and toll road user satisfaction reflecting their perception.

As shown in Figure 4-8 (the 2nd questionnaire), the heads, management teams, and staff of the divisions agree with the strategic objectives and measures for customer

perspective in this study. Figure 4-8 also indicated that the heads of divisions are more agreed than the management teams and staff of the divisions regarding the strategic objectives and measures proposed. This suggested that the ideas of the strategic objectives and measures proposed for customer perspective can be accepted by the company.

The objective of delivering government/legislation requirements in this perspective was proposed by the head of AMS division. The head of the division said to obtain concessionary licenses from the BPJT to operate the toll road network in the financial perspective, Jasa Marga must deliver government/legislation requirements.

The top key members of the two divisions were also asked to what extent they would agree with the strategic objectives and measures for internal perspective in this study. In this internal perspective, as discussed in Chapter 3, managers identify the processes that are most critical for achieving customer and shareholder objectives. The top objectives for internal perspective are to improve security, travel time, and toll road safety for toll road users. The drivers for this perspective focus on the objectives of increasing ride quality, enhancing pavement condition, and outsourcing non-core business process. The latter could be the outsourcing of highway maintenance activities other firms. The process continues by asking how the company will achieve these second level objectives. These drivers could be achieved by increasing toll road capacity, better information and network management, and improving internal engineering management and technical processes.

As shown in Figure 4-8 (the 3rd questionnaire), the heads and staff of the divisions agree with the strategic objectives and measures for internal perspective in this study. Similarly, the findings showed that the management teams of divisions somewhat

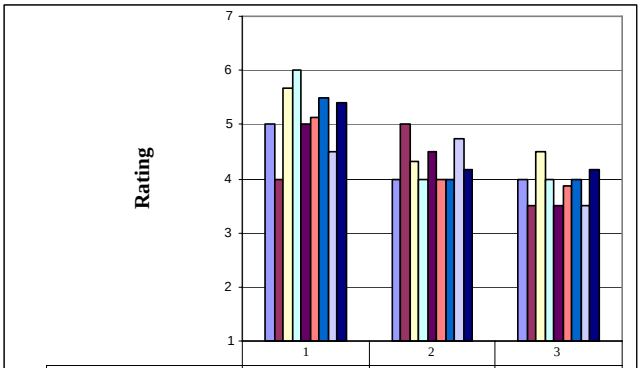
agree with the strategic objectives and measures in this perspective. Figure 4-8 also indicated that the management teams of divisions are more agreed than the heads and staff of the divisions with the strategic objectives and measures proposed in this perspective. Consequently, the results indicated that the ideas of the strategic objectives and measures proposed for internal perspective can be accepted by the company.

In this study, the objective of increasing outsourcing non-core business process in this perspective was proposed by the head of AMS division. The head of the division said that their company has developed ideas with regard to how to implement Performance-Based Maintenance Contract (PBMC), and finally, outsource the road maintenance activities to other organizations. However, one of the most significant concerns with their outsourcing contract's implementation is how to define performance specifications to ensure long-term benefits of outsourcing maintenance. The company still investigates the effects of specifications on the total cost of managing road infrastructure in the toll road network; this is a critical issue to Jasa Marga operating under tight budget constrains. The head of the AMS division also said that the company needs to carefully plan road maintenance to avoid expensive repairs.

The key members of AMS as well as HRD divisions were asked to what extent they would agree with the strategic objectives and measures for learning and growth perspective in this study. The learning and growth perspective in this study focus on the main objectives of implementing innovative solutions and best practice to improve toll road service, increasing employee productivity, as well as developing a positive working environment.

As shown in Figure 4-8 (the 4th questionnaire), the heads, management teams and staff of the divisions agree with the strategic objectives and measures for learning and growth perspective in this study. Figure 4-8 also indicated that the staff of divisions is more agreed than the management teams and staff of the divisions. This implied that the ideas of the strategic objectives and measures proposed for learning and growth perspective can be also accepted by the company. The key members of the two divisions advised the author that this perspective should also focus on the objective of implementing Good Corporate Governance (GCG). The objective is included the scorecard to enable the company develop a positive working environment, meet government requirements in the customer perspective, as well as increase budget performance in the financial perspective. They also said that the objective of implementing the GCG has been implemented in the key performance indicators (KPIs) approach in its performance measurement

4.4.3 Adoption of the Balanced Scorecard



	1	2	3
HRD Division - Head	5	4	4
HRD Division - Management	4	5	3.50
HRD Division - Staff	5.67	4.33	4.50
AMS Division - Head	6	4	4
AMS Division - Management	5	4.50	3.50
AMS Division - Staff	5.14	4	3.86
Average - Head	5.50	4	4
Average - Management	4.50	4.75	3.50
Average - Staff	5.41	4.17	4.18

Questionnaires:
1. Usefulness of the Balanced Scorecard
2. Difficulty of developing the linkages within and across the four perspectives
3. Difficulty of adopting the Balanced Scorecard

Figure 4-9 Adoption of the Balanced Scorecard

The heads, management teams, and staff of AMS as well as HRD divisions were asked about their opinions on the usefulness of the Balanced Scorecard as a performance measurement tool in their company. As shown in Figure 4-9 (the 1st questionnaire), the heads and staff of the divisions believe that the Balanced Scorecard is useful. Similarly, the management teams indicated that the Balanced Scorecard is somewhat useful. These results indicated that the Balanced Scorecard approach was viewed very positively by the top key members of the divisions collectively.

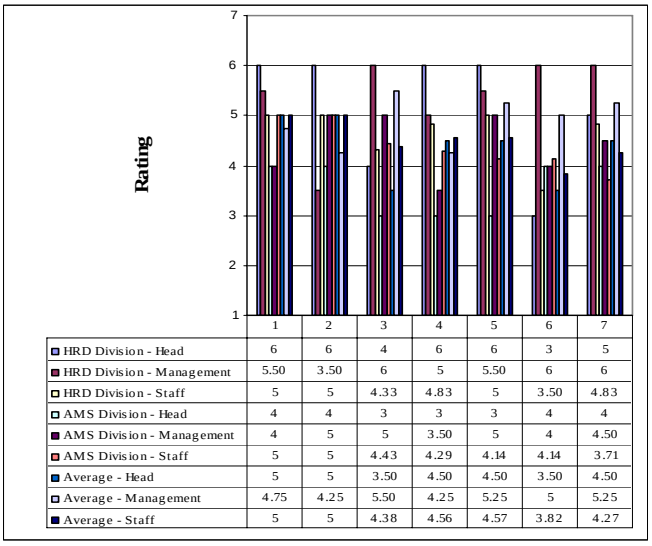
The key members of AMS as well as HRD divisions were also asked about how they would rate the assignment if they were assigned to establish the linkages within and across the four perspectives. As shown in Figure 4-9 (the 2nd questionnaire), the heads and staff of the divisions indicated a neutral and fairly neutral response if they were given an assignment to develop the linkages within and across the four perspectives. The management teams of the divisions indicated that they thought that it would be somewhat easy to perform this assignment. The scorecard should provide information on the company's strategy, starting with the financial objectives, and then linking them to customers, internal processes, and finally employees and systems to deliver the desired long-run economic performance. The linkages within and across the four perspectives should be assessed periodically so that it could focus on the objective of achieving growth and profitability objectives.

Subsequently, the top key members of AMS as well as HRD divisions were asked about the degree of difficulty if they were given a task to adopt the Balanced Scorecard as a performance measurement in their company. As shown in Figure 4-9 (the 3rd questionnaire), the heads and staff of the divisions indicated a neutral response, with an average rating of 4. In addition, the data from the staff of the divisions also indicated that they were fairly neutral.

The findings suggested that the heads and staff of these two divisions cannot assess about whether they have the ability to establish the linkages within and across the four perspectives and to adopt the Balanced Scorecard approach or not. However, the data from the management teams of the divisions indicated that they would find difficulty in implementing a Balanced Scorecard. Therefore, the company requires external help if it is going to adopt the Balanced Scorecard approach. One benefit of this study is that interest in the Balanced Scorecard has been stimulated among senior executives of the company to understand further about the approach.

The key members of AMS as well as HRD divisions were also asked about how much time they need to adopt the Balanced Scorecard approach as a performance measurement in their company. The heads, management teams, and staff of the divisions indicated that they need 1.5 years to carry out the assignment. The findings in Figure 4-9 showed that the Balanced Scorecard approach could be adopted successfully over a period of a year in this company, and time needed may be largely determined by the availability of the all top and middle level managements for interviews, workshops, and group meetings. One benefit of adoption of the Balanced Scorecard approach over a period of a year is that senior executives will have more time to con-template and validate on ideas for a strategic performance measurement framework in accordance with the company needs.

4.4.4 Implementation Problems



	1	2	3	4	5	6	7
HRD Division - Head	6	6	4	6	6	3	5
HRD Division - Management	5.50	3.50	6	5	5.50	6	6
HRD Division - Staff	5	5	4.33	4.83	5	3.50	4.83
AMS Division - Head	4	4	3	3	3	4	4
AMS Division - Management	4	5	5	3.50	5	4	4.50
AMS Division - Staff	5	5	4.43	4.29	4.14	4.14	3.71
Average - Head	5	5	3.50	4.50	4.50	3.50	4.50
Average - Management	4.75	4.25	5.50	4.25	5.25	5	5.25
Average - Staff	5	5	4.38	4.56	4.57	3.82	4.27

Questionnaires:
1. Data availability
2. Data collection
3. Employee resistance
4. The identification of strategic objectives
5. The identification of measures
6. Communicating the Balanced Scorecard to employees
7. The integrating problems

Figure 4-10 Implementation Problems

The key members of AMS as well as HRD divisions were then asked more specifically about the extent of problems expected in data availability and collection with regard to the Balanced Scorecard approach. As shown in Figure. 4-10 (the 1st and 2nd questionnaire), the heads and staff of the two divisions think there will not be problems regarding data availability and collection during the implementation of the Balanced Scorecard approach in their company. Similarly, the management teams of divisions have also no problems with the data availability. However, Figure 4-10 showed that the management teams indicated a fairly neutral response to the problems regarding the data collection. The findings implied that data availability and collection should not be a significant problem to the company.

The key members of AMS as well as HRD divisions were also asked about whether they anticipated regarding their employees' acceptance during the implementation of

BSC in their company. As shown in Figure 4-10 (the 3rd questionnaire), the results indicated that the heads of divisions expected that there may be resistance from the employees in adopting the Balanced Scorecard approach in their company. However, the data from the management teams the divisions indicated that they did not expect much opposition from their employees during the implementation of the Balanced Scorecard. However, the staffs of the divisions were rather neutral on the question of employee resistance. This suggests that the implementation of the Balanced Scorecard approach in this company might encounter some resistance from employees. Therefore, the company will need external consultants or knowledgeable internal practitioners to educate its employees and guide the company to develop ideas for a strategic performance measurement framework based on the Balanced Scorecard approach in ways that are nonthreatening and do not trigger defensive responses.

The key members of AMS as well as HRD divisions were then asked about whether strategic objectives and measures would be easily identified during the implementation of the Balanced Scorecard in Jasa Marga. The results in Figure 4-10 (the 4th and 5th questionnaire) suggested that the heads of the divisions would have no problems with regard to the identification of strategic objectives and measures during the implementation of the Balanced Scorecard approach in their company. Similarly, the staff of the divisions indicated that they would also have no problems regarding the identification of strategic objectives and measures. The management teams indicated that they were fairly neural in their response regarding the identification of strategic objectives. They were more optimistic with the identification of measures than the heads and staff of the divisions. The participants were also asked what challenges and difficulties they encountered in developing and selecting the strategic objectives and measures. The challenges and difficulties that would be faced by their company

focused the link between the objectives and the strategies, the need for prioritizing and linking the measures appropriately, as well as the need for monitoring whether the measures were accurate, achievable, and available for use. Some measures are also not easily quantifiable. The respondents suggested that the difference in views and opinions could also cause some difficulties in reaching a consensus on the strategic objectives and measures. Based on the interview with the key members of the two divisions, this difference could arise unless the vision and strategies are clear and owned by the key members of management team, middle managers, and employees. Otherwise, the strategic objectives and measures might be developed according to their own interpretations of the vision and strategies.

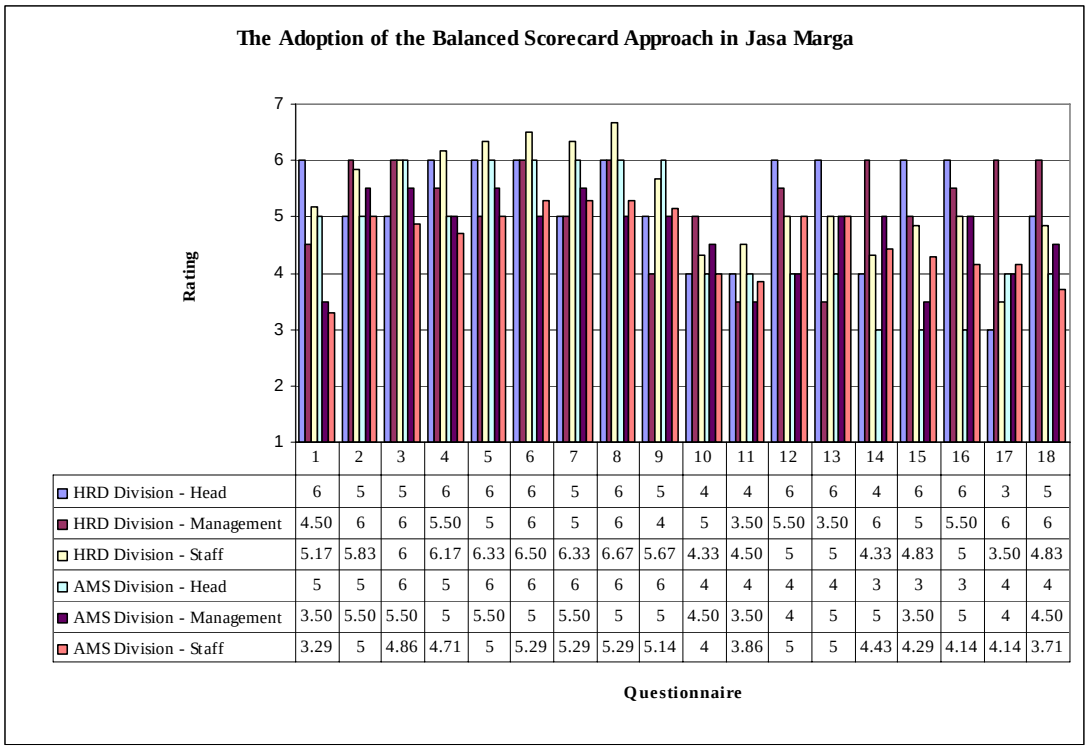
The heads, management teams, and staff of AMS as well as HRD divisions were then asked more specifically about the extent of problems expected in communicating the Balanced Scorecard to people on the ground during the implementation of the approach in their company. The results as shown in Figure 4-10 (the 6th questionnaire) indicated that the heads and staff of the divisions anticipate problems with regard to communicating the Balanced Scorecard to people on the ground. However, the management teams of the divisions indicated that they think there will not be problems with regard to communication of the Balanced Scorecard to employees. These results also showed that the management teams are more optimistic than the heads and staff of the divisions that the Balanced Scorecard concept could be communicated to people on the ground.

The management teams suggested that communication to all employees in their company about the company's vision and strategies has been viewed as an internal marketing campaign. The objectives of this campaign are to enhance each employee's understanding of the company's strategy, increase motivation to achieve objectives,

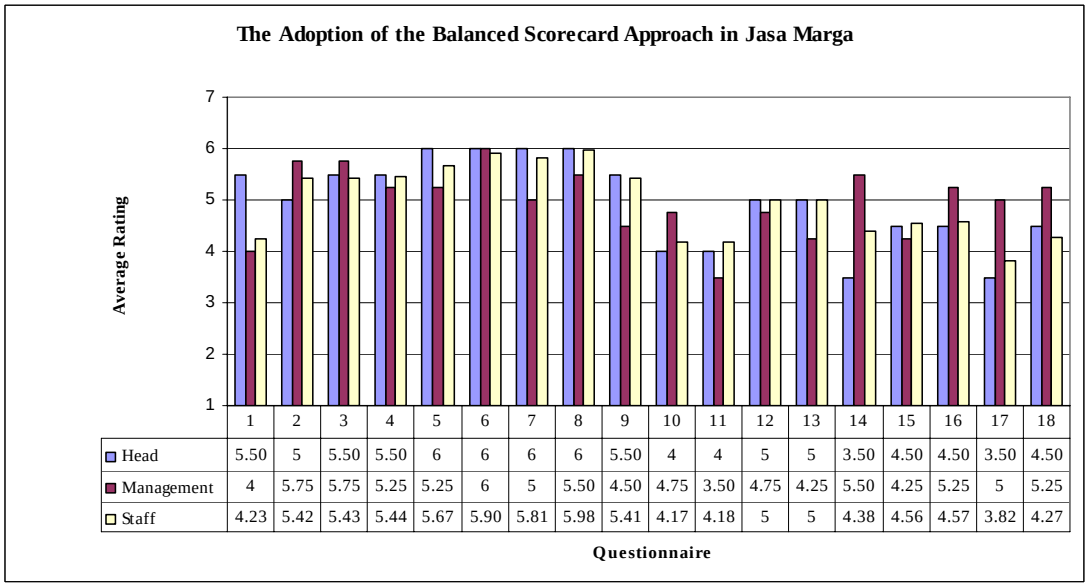
and more importantly, to win the hearts of all employees. However, the heads and staff of the two divisions did not want to announce the Balanced Scorecard to their employees as yet. They said that their employees have already been subject to several organizational change programs, as a result of the changing environment of toll roads in Indonesia. The company recently implemented the Key Performance Indicator (KPI) approach in its performance measurement. They feared that of too many change initiatives from the management their employees might become weary, and finally, the employees would view the pronouncement as another vision and change program that can be shelved and ignored. The top key members of the divisions stated that the study will become a preliminary observation for implementing the Balanced Scorecard in their organization. They also said that the study has generated enthusiasm among the key members of the divisions about the Balanced Scorecard as a performance measurement and strategic management system.

The top key members of the two divisions were also asked about difficulty of their company in integrating the Balanced Scorecard into existing performance measurement. The findings in Figure 4-10 (the 7^{th} questionnaire) indicated that the heads and staff of the divisions thought that it would be easy for their company to integrate the Balanced Scorecard into the existing performance measurement system. Similarly, the management staff of divisions rated easy for their company in integrating the Balanced Scorecard approach into the existing performance measurement. The company recently implemented a similar performance measurement with the Balanced Scorecard that incorporates a mixture of financial and non-financial measures. The key members of the divisions said that there would be some problems associated with the integration of Balanced Scorecard, such as the setting up of data collection system and the revision of the existing management information system.

Subsequently, the all responses to the questions from members of the two divisions of Jasa Marga are summarized in Figure 4.11.



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
HRD Division - Head	6	5	5	6	6	6	5	6	5	4	4	6	6	4	6	6	3	5
HRD Division - Management	4.50	6	6	5.50	5	6	5	6	4	5	3.50	5.50	3.50	6	5	5.50	6	6
HRD Division - Staff	5.17	5.83	6	6.17	6.33	6.50	6.33	6.67	5.67	4.33	4.50	5	5	4.33	4.83	5	3.50	4.83
AMS Division - Head	5	5	6	5	6	6	6	6	6	4	4	4	4	3	3	3	4	4
AMS Division - Management	3.50	5.50	5.50	5	5.50	5	5.50	5	5	4.50	3.50	4	5	5	3.50	5	4	4.50
AMS Division - Staff	3.29	5	4.86	4.71	5	5.29	5.29	5.29	5.14	4	3.86	5	5	4.43	4.29	4.14	4.14	3.71



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Head	5.50	5	5.50	5.50	6	6	6	6	5.50	4	4	5	5	3.50	4.50	4.50	3.50	4.50
Management	4	5.75	5.75	5.25	5.25	6	5	5.50	4.50	4.75	3.50	4.75	4.25	5.50	4.25	5.25	5	5.25
Staff	4.23	5.42	5.43	5.44	5.67	5.90	5.81	5.98	5.41	4.17	4.18	5	5	4.38	4.56	4.57	3.82	4.27

Figure 4-11 All responses to the questions of the Balanced Scorecard study

Perception of the Balanced Scorecard approach

1. Familiarity with the Balanced Scorecard
2. Interested to read further the Balanced Scorecard
3. The degree of agreement of implementing the Balanced Scorecard
4. The involvement of senior executives in implementing Balanced Scorecard

Perception of the Proposed Scorecards

5. The degree of agreement of the strategic objectives and measures in financial perspective
6. The degree of agreement of the strategic objectives and measures in customer perspective
7. The degree of agreement of the strategic objectives and measures in internal perspective
8. The degree of agreement of the strategic objectives and measures in learning and growth perspective

Adoption of the Balanced Scorecard

9. Usefulness of the Balanced Scorecard
10. Difficulty of developing the linkages within and across the four perspectives
11. Difficulty of adopting the Balanced Scorecard. If you were given a task to develop the BSC, how much time do you need to complete the task?

Implementation Problems

12. Data availability
13. Data collection
14. Employee resistance
15. The identification of strategic objectives
16. The identification of measures
17. Communicating the Balanced Scorecard to employees
18. The integrating problems

4.5 Feedback

The top key members of the two divisions were interested in the Balanced Scorecard study in their company. They were also interested to implement the Balanced Scorecard in their division. During interview in the company, the head of AMS also requested a summary of the main results and discussions of the study as the preliminary study for adopting the Balanced Scorecard approach in their division.

The proposed scorecard was revised based on discussions with the top key members of the two divisions. The feedback about the content of the final ideas suggested by the top key members of the two divisions was discussed. The head of AMS division proposed that this study should incorporate the objective of delivering government/legislation requirements in the customer perspective. This perspective is expected to represent the views of government. It is to measure how government can assess toll road service provided by this company. The objective of increasing outsourcing non-core business process in this perspective was also proposed by the head of AMS division. Recently, their company has developed ideas with regard to how to outsource the road maintenance activities to other organizations. However, the company still defines performance specifications to ensure long-term benefits of outsourcing road maintenance, and investigates the effects of specifications on the total cost of managing road infrastructure in the toll road network. This is critical issues to Jasa Marga operating under tight budget constrains.

Suggestions for implementation for the feedback session, the company should also translate the Balanced Scorecard proposed in this study into individual strategic objectives and measures that each employee could take to contribute to the company's

objectives and performance targets. Therefore, this Balanced Scorecard should be also translated into a linked Balanced Scorecard for lower-level divisions and individuals. For the Balanced Scorecard approach to motivate employees, the company should also develop recognition, promotion, and compensation programs that are connected to achievement of scorecard objectives.

The Corporate Secretary stated that the company has also developed several ideas for a strategic performance measurement framework based on the Balanced Scorecard approach. They commented that the scorecard proposed in this study was more structured and comprehensive. The Corporate Secretary advised that the proposed scorecard should also focus on the objective of implementing Good Corporate Governance (GCG). They also requested feedback about their company's existing performance measurement as well as responses about how the Balanced Scorecard could be integrated into the existing performance measurement.

CHAPTER V

SUMMARY AND CONCLUSIONS

5.1 Overview

Chapter 5 concludes the thesis with a summary of the main conclusions and recommendations for further research. This chapter also reiterates the research objectives prior to the summary of the study. Furthermore, the objectives of this study are to (1) develop ideas for a strategic performance measurement framework in a semi-private highway organization based on the Balanced Scorecard approach; (2) use the Balanced Scorecard process to identify relevant drivers and measures for a toll road company, and (3) assess the viability of these ideas and proposals with the organization.

5.2 Summary of results

The study has developed ideas for a strategic performance measurement framework in a semi-private highway organization based on the Balanced Scorecard approach. It adapted the theory proposed by Kaplan and Norton. The context of this study is provided by a semi-autonomous government linked company involved in the operation of a toll road network, using data and information reported by Jasa Marga. Due to reasons of the limitation time and commercial sensitivity, the research methodology for the adoption and creation of Balanced Scorecard, as discussed in Chapter 3, are feasible based on the experience with a toll road company.

The study has identified certain critical success factors for a successful Balanced Scorecard adoption in Jasa Marga. The results of the questionnaire survey, as well as a discussion of the feedback received from members of the two divisions of Jasa Marga indicate that the company's existing performance measurement has the characteristics that can be integrated with the Balanced Scorecard approach. This may assist the company in adopting the Balanced Scorecard approach.

The top key members of Asset Maintenance and Security and Human Resources Development Divisions in the company, as discussed in Chapter 4, were interested to understand further about the Balanced Scorecard, as well as to implement the approach as a performance measurement in their company. The results indicated that the Balanced Scorecard could be useful as a performance measurement in the company. The findings also suggest that the active sponsorship and participation from all senior executives are very important to adopt the Balanced Scorecard approach successfully. The heads, management teams, and staffs of the divisions also agreed if all top and middle level managements of the company are involved in the implementation of Balanced Scorecard. Although this study has difficulty to involve all senior executives in developing ideas for a strategic performance measurement framework based on the Balanced Scorecard.

The results also indicated that there is a gap between the heads, management teams, and staffs in perceiving the implementation of Balanced Scorecard in their company. As discussed in Chapter 4, the result indicated that the heads of Asset Maintenance and Security as well as Human Resources Development Divisions considered that there would be resistance from the employees during the implementing of Balanced Scorecard. Even though the data from the management teams of the divisions indicated

that they did not expect much opposition from their employees during the implementation of the Balanced Scorecard. This result suggests that the implementation of the Balanced Scorecard in Jasa Marga might encounter some resistance from employees within the organization.

This study also indicated that the adoption of Balanced Scorecard approach in Jasa Marga requires a consultant/practitioner who can maintain the framework, philosophy, and methodology, as well as collect relevant background information for constructing the scorecard. The consultant/practitioner is responsible for the process of Balanced Scorecard adoption. One difficulty of the Balanced Scorecard implementation is communicating such management initiative to people on the ground. The result indicated that the heads and staffs of the divisions supposed that the company would have problems in communicating the Balanced Scorecard to all level employees. Therefore, the company will need external consultants or knowledgeable internal practitioners to educate its employees and guide the company in adopting the Balanced Scorecard approach in ways that are nonthreatening and do not trigger defensive responses.

The study has developed several ideas with regard to how a Balanced Scorecard approach could be introduced into the technical/engineering process of a toll road operator. It has translated the company's vision and missions into strategic objectives and potential measures for different perspectives, and developed cause-and-effect relationships and linkages within and across all the four scorecard perspectives. The Balanced Scorecard study helped the company in giving a balanced presentation of both financial and operational measures by adding three non-financial perspectives, thereby allowing senior executives of the company to know their

business performance based on four key perspectives, namely, the financial, customer, internal business process, and learning and growth perspectives.

The study has proposed the Balanced Scorecard as a means of linking engineering performance management to financial performance management. This has been illustrated using a specific case study involving Jasa Marga, a semi-autonomous state-owned toll road company that is facing a new regulatory environment and increased competition. The ideas were developed using the four-step approach proposed by Kaplan and Norton. However, the last implementation step in this four-step process was not actually carried out in this study because the company expressed reservations at carrying out another management initiative when they were still in the midst of introducing the KPI approach in its performance measurement. It was also not possible to develop ideas with regard to implementation strategy at this point because of the lack of time and resources. However, key members of the divisions did feedback on implementation difficulties when the results of the survey were discussed with them. The study has generated enthusiasm among the key members of the divisions about the Balanced Scorecard as a performance measurement and strategic management system. This is conceived to stimulate the senior and middle executives of the company to acquire valuable knowledge about the benefits of Balanced Scorecard implementation in their company.

5.3 Conclusions

Based on our experience, the Balanced Scorecard study is very useful. The study has helped Jasa Marga in translating company's vision and mission into the strategic objectives and measure, describing an element of a chain of cause-and-effect relationships that communicates the meaning of the business unit's strategy to the

organization, as well as communicating how the strategic objectives and measures could be achieved. The Balanced Scorecard provided an early indication about whether the strategy is being implemented successfully. The top key members of Asset Maintenance and Security Division, as well as Human Resources Development Divisions in this company were very interested with this study. They were also interested to implement the Balanced Scorecard in their division.

The Balanced Scorecard approach complements traditional financial measurement and give a balanced presentation of both financial and operational measures by adding three non-financial perspectives, thereby allowing managers of the organization to know their business performance based on four key perspectives, namely, the financial, customer, internal business process, and learning and growth perspectives. It also brings in additional perspectives for performance management relating to the financial and organizational development aspects, beyond the engineering aspects existing in traditional Pavement Management System.

5.4 Limitations of the study and recommendation for further research

Firstly, the results discussed on this study are based on the data and information obtained from one semi-autonomous government linked company involved in the operation of a toll road network. To obtain a broader and clearer perspective of the Balanced Scorecard adoption, comparative study with other toll road companies in the neighboring countries i.e. Singapore, Malaysia, Thailand, and the Philippines should also be considered.

Secondly, this Balanced Scorecard study did not involve a more comprehensive solution of the senior executives of Jasa Marga. Ideally, all senior executives should be

involved in the effort to translate an organization’s vision and mission into strategic objectives and measures.

Thirdly, the Balanced Scorecard will be of great benefit when it is deployed to drive organizational change. To communicate the need for organizational change, the adoption of the Balanced Scorecard approach should develop the performance targets for the scorecard measures, which if achieved, will transform the organization. However, this study did not develop the performance targets for each strategic measure due to reasons of commercial sensitivity.

Fourthly, the study did not include any plans for implementation of the proposed framework. Such a plan usually includes consideration of how strategic objectives and measures are linked to the company’s data base and information systems, communicated throughout company to all employees, and more importantly, integrated into the company’s existing performance measurement.

Fifthly, the company's strategic objectives and measures need to be translated into a linked scorecard for lower-level departments, teams, and individuals so that each employee can contribute to the company's objectives. The study did not translate the company’s high-level strategic objectives and measures into individual strategic objectives and measures. However, the scorecard's framework of linked cause-and-effect relationships in this study can be used as guidance for the selection of lower-level strategic objectives and measures, in accordance with the Balanced Scorecard at the company level.

Sixthly, the study did not develop recognition, promotion, and compensation programs connected to the achievement of scorecard objectives. These have the obvious

advantage of aligning the interests of senior executives to that of achieving the company’s strategic objectives. Tying incentive compensation of all senior executives to strategic objectives and measures is useful to motivate employees, and will encourage commitment to overall organizational objectives. For this company, it may have some risks because the strategic objectives and measures in this study just represent a tentative statement of the company's strategy. The difficulty can occur because the proposed scorecard in this study may not be perfect substitutes for the company’s strategic objectives. Therefore, that will be much better if the company has already had a procedure to test and validate about whether the data and information for the selected strategic objectives and measures are right and reliable before tying incentive compensation to scorecard.

Finally, a strategic feedback system should also be designed to test, validate, and modify the hypotheses embedded in the company strategy. The feedback is needed to assess about whether the planned strategy is being executed according to plan. It is also needed to refine the strategic linkages of the scorecard, as well as assess about whether the planned strategy remains a viable and successful strategy.

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Appendix A: Balanced Scorecard Study Questionnaires

Section 1 - About You

1. Gender:

   o Male o Female

2. Age:

   o < 30 years old o 41 – 50 years old

   o 30 – 40 years old o > 50 years old

3. Educational background:

   o Primary School o Senior High School o Undergraduate

   o Junior High School o Diploma o Postgraduate

4. Please select the field of study most closely related to your educational background:

   o Accounting or Business o Education o Law

   o Communication o Engineering o Physical Science

   o Economic o Information Technology (IT) o Social Science

5. Total years of work experience in Indonesia Highway Corporation [PT. Jasa Marga (Persero)]:

   o < 5 years o 11 – 20 years

   o 5 – 10 years o > 20 years

6. What is your division within the company?

   o Human Resources Development

   o Asset Maintenance and Security Division

7. What is your position within the division? _____

Section 2 - About Your Company's Strategies

Familiarity with the Vision, Mission, and Performance Measurement

	Very familiar						Not familiar at all
Rating	**7**	**6**	**5**	**4**	**3**	**2**	**1**
1. How familiar are you with your company's vision and mission?	O	O	O	O	O	O	O
2. How familiar are you with your company's performance measurement?	O	O	O	O	O	O	O

Linkage Strategies

	Very well						Very poor
Rating	**7**	**6**	**5**	**4**	**3**	**2**	**1**
3. How well are your company's vision and mission linked directly to the operation of company?	O	O	O	O	O	O	O
4. How well are your company's strategic objectives linked directly to the performance measures of company?	O	O	O	O	O	O	O

Communicating and Monitoring

	Very frequently						Not frequently at all
per Year	**> 4 times**	**4 times**	**3 times**	**2 times**	**1 time**	**< 1 time**	**Never**
Rating	**7**	**6**	**5**	**4**	**3**	**2**	**1**
5. How often does your company communicate the performance measurement to all employees?	O	O	O	O	O	O	O

	Very well						Very poor
Rating	**7**	**6**	**5**	**4**	**3**	**2**	**1**
6. How well is your company in monitoring that the strategic objectives of company have been achieved?	O	O	O	O	O	O	O
7. How well is your company in monitoring that the performance targets of company have been achieved?	O	O	O	O	O	O	O

Difficulty of Developing the Company's Strategies and Objectives

	Very easy						Very difficult
Rating	**7**	**6**	**5**	**4**	**3**	**2**	**1**
8. Please rate the difficulty for your company in developing the strategies and objectives	O	O	O	O	O	O	O

Cause and Effect Relationships

	Very well						Very poor
Rating	**7**	**6**	**5**	**4**	**3**	**2**	**1**
9. How well is your company in establishing relationships and linkages between key performance indicators?	O	O	O	O	O	O	O

Section 3 – Perception of Using Balanced Scorecard in Jasa Marga

Perception of the Balanced Scorecard

Very familiar **Not familiar at all**

Rating	7	6	5	4	3	2	1
1. How familiar are you with the Balanced Scorecard (BSC)?	O	O	O	O	O	O	O

Very interested **Not interested at all**

Rating	7	6	5	4	3	2	1
2. How interested will you be to read further about the BSC?	O	O	O	O	O	O	O

Strongly agree **Strongly disagree**

Rating	7	6	5	4	3	2	1
3. To what extent do you agree if your company implements the BSC as a performance measurement?	O	O	O	O	O	O	O

4. The Implementation of BSC requires the commitment from a company's leadership team. Therefore the long-term personal commitment of top leadership is very important.

	Strongly agree						**Strongly disagree**
Rating	**7**	**6**	**5**	**4**	**3**	**2**	**1**
All top and middle level managements are involved in BSC development	O	O	O	O	O	O	O

Perception of the proposed strategic objectives and measures

	Strongly agree						**Strongly disagree**
Rating	**7**	**6**	**5**	**4**	**3**	**2**	**1**
5. To what extent do you agree with strategic objectives and measures in this study for financial perspective?	O	O	O	O	O	O	O
6. To what extent do you agree with strategic objectives and measures in this study for customer perspective?	O	O	O	O	O	O	O
7. To what extent do you agree with strategic objectives and measures in this study for internal perspective?	O	O	O	O	O	O	O
8. To what extent do you agree with strategic objectives and measures in this study for learning and growth perspective?	O	O	O	O	O	O	O

Adoption of the Balanced Scorecard

Very useful **Not useful at all**

Rating	7	6	5	4	3	2	1
9. How useful do you think that the BSC as a performance measurement will be in your company?	O	O	O	O	O	O	O

Very easy **Very difficult**

Rating	7	6	5	4	3	2	1
10. How would you rate the assignment if you were assigned to establish the linkages within and across the four perspectives?	O	O	O	O	O	O	O

Very easy **Very difficult**

Rating	7	6	5	4	3	2	1
11. If you were given a task to develop the BSC as a performance measurement in your company, how difficult do you rate the task?	O	O	O	O	O	O	O

Months	12	14	16	18	20	22	24
If you were given a task to develop the BSC, how much time do you need to complete the task?	O	O	O	O	O	O	O

Implementation Problems

What problems will you anticipate regarding the following factors during the implementation of BSC in your company:

	Not problem at all						**Serious problem**
Rating	**7**	**6**	**5**	**4**	**3**	**2**	**1**
12. Data availability	O	O	O	O	O	O	O
13. Data collection	O	O	O	O	O	O	O
14. Employee resistance	O	O	O	O	O	O	O
15. Identification of strategic objectives for the BSC	O	O	O	O	O	O	O
16. Identification of measures for the BSC	O	O	O	O	O	O	O
17. Ease of communicating the BSC to people on the ground	O	O	O	O	O	O	O
18. Integrating the BSC into existing performance measurement	O	O	O	O	O	O	O

Notes:

Rating	Familiar	Good	Difficulty	Positive	Agree	Problem
1	Not familiar at all	Not well at all	Very difficult	Very negative	Strongly disagree	Not problem at all
2	Not familiar	Not well	Difficult	Negative	Disagree	Not problem
3	Somewhat not familiar	Somewhat not well	Somewhat difficult	Somewhat negative	Somewhat disagree	Somewhat not problem
4	Neutral	Neutral	Neutral	Neutral	Neutral	Neutral
5	Somewhat familiar	Somewhat well	Somewhat easy	Somewhat positive	Somewhat agree	Somewhat problem
6	Familiar	Well	Easy	Positive	Agree	Problem
7	Very familiar	Very well	Very easy	Very positive	Strongly agree	Serious problem